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When Disney was making *Honey, I Shrunk the Kids,* its own in-house effects facility lacked both the equipment and the personnel to take on the assignment. Three years later, *Honey, I Blew Up the Kid* would mark the reemergence of Buena Vista Visual Effects. Providing support were eleven other effects companies, including CIS-Hollywood and Sony High Definition in their feature film debuts. *Article by Jody Duncan.*

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Among the effects challenges of Robert Zemeckis' black comedy, *Death Becomes Her,* were the unlikely depictions of Goldie Hawn as a two-hundred-fifty-pound blimp and Meryl Streep with a twisted-around head. The effects teams at Industrial Light and Magic and Amalgamated Dynamics Incorporated joined with makeup artists Dick Smith and Kevin Haney to realize the comically horrific tale. *Article by Kevin H. Martin.*

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COVER — Adam and his mom are restored to size in *Honey, I Blew Up the Kid.*

COMMERCIAL SPOT: SIMIAN SIMULATION

article by Janice Hubbard

It’s a smoky bar, Anytown, U.S.A. A voice calls out. “BAR-tender!” We see the speaker — and it takes a moment to realize that it is a chimp. Sure, chimpanzees can’t talk; but this one, sitting at the bar and philosophizing about the Evolution of beer as he himself evolves into a modern man, really appears to be doing just that. His teeth and tongue are clearly visible, and his mouth is going through all the motions in perfect sync with the voice.

This visual pun is presented by Michelob Golden Draft in the commercial spot entitled ‘Evolution’ — and the visual effects are intoxicating. To accomplish the simian lip-sync, Rhythm & Hues utilized a new application of computer animation that is, itself, a kind of Evolution. Whereas, formerly, effects such as these were achieved by painting two-dimensionally on top of live-action plate photography, Michelob’s talking primate was realized by overlaying an animated, three-dimensional computer generated face on top of a live-action chimp.

The first step was to set up a digital database of the chimp’s head. Rick Lazzarini’s Character Shop was commissioned to sculpt models of the chimp that could then be scanned into the computer. “Since three chimps were to be on the live-action set,” said effects producer Doug Nichols, “Lazzarini had sculptors Jim Kagel, John Spence and Glenn Hans make life-size heads of all three. That way we could make our computer generated image immediately following the shoot, no matter which chimp was ultimately used.” Lazzarini and crew measured the live-action chimps precisely. “We used sculptor’s calipers,” Lazzarini stated, “to get the dimensions of their skulls, measure the distance between the centers of their eyes, the corners of their eyes and so forth.” Once the heads were completed, dental stone castings of all three were made and mounted on wooden bases.

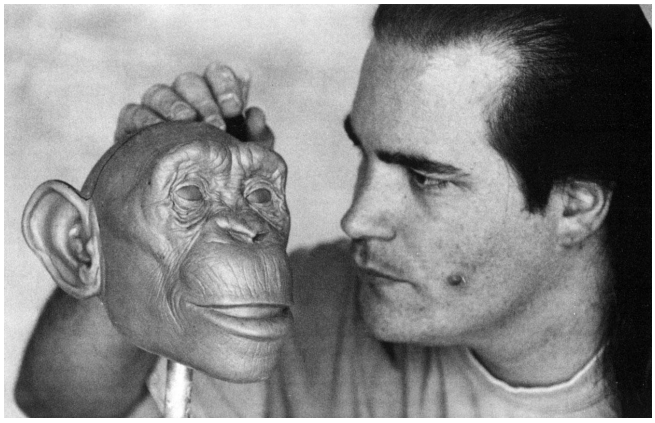
A three-year-old chimp named Sally was the eventual selectee. Her head sculpture was marked with lines — much like a topographical map — and her facial features were traced with a digitizing pen so that a full range of expression could be created. This base of information was used to track the live-action head with the computer generated overlay, and later to animate the mouth and muzzle.

Randy Roberts of Rhythm & Hues directed the live-action shoot. As with any film work involving animals, it had its inherent problems, including the limited attention span of the chimp. To keep the primate as calm as possible, the bar set was lit from above. Even so, the skittish chimp would perform for an average of only about thirty seconds per take.

In spite of the slow progress, however, Sally established a real rapport with actor David Sterry. Sterry went through a number of makeup changes on his way up the Evolutionary scale. When he finally appeared on the set in full simian facial appliance and forearm wigs, he and Sally enjoyed a communion of sorts. “She was a very affectionate chimp in the first place,” noted animator Robert Lurye, “but the way she reacted to the actor was kind of eerie. They were kissing and touching. Everyone on the set stopped to watch their response to each other.”

Complicating matters for Rhythm & Hues was a decision to shoot the spot without motion control camera moves. “The beauty of motion control,” explained supervising technical director Larry Weinberg, “is that it gives you coordinates that can be transferred from camera to computer and repeated during the animation process. But the client wanted creative freedom; so the camera was moving around, documentary-style. It meant a lot of extra work later on — the chimp and camera moves had to be tracked so that we could overlay the animation.”

The completed live-action footage went to the ad agency — DDB Needham Worldwide — where final scenes were selected and then returned to Rhythm & Hues. “We transferred the elements to computer tape format,” said Nichols, “and then put them in our computer so that we could manipulate the video and integrate it with our computer generated model.” Once the elements had been input into the computer, animators Robert Lurye and Nancy Kato realized the difficult task of tracking the chimp’s head in each of the shots. “There was nothing stationary to fix on to,” said Lurye. “Everything was in constant motion. It was a frame-by-frame process.”



Rick Lazzarini of The Character Shop prepares to mold a chimp head for the Michelob ‘Evolution’ commercial.

The chimp sculptures were digitized by Rhythm & Hues and animated to perform lip-sync dialogue. The mouth area was then composited over a real chimp’s.

Animating the muzzle of the computer model to deliver the scripted lines was the next step. “This was done using an animation program called ‘Maggots’ which created the mouth shapes,” said Lurye, “and a Macintosh Mac Classic interfaced with Silicon Graphics Iris workstations. The Mac Classic enabled us to play the sound frame-by-frame so that we could hear the precise moment when words or syllables would begin and end, or when vowel sounds would shift from an ‘eee’ sound to an ‘ay’ sound, for instance.” For inspiration, the animators studied Walt Disney’s The Jungle Book. “The scene where the apes sing ‘I Want to Be Like You’ was particularly helpful,” said technical director Kevin Barnhill, “because we could study how the lips had been animated to make specific sounds or words.”

The chimp sculptures were digitized by Rhythm & Hues and animated to perform lip-sync dialogue. The mouth area was then composited over a real chimp’s.

Lighting adjustments and some texture mapping — done on a Silicon Graphics Predator — enhanced the illusion. “I took out some lighting from the actual shot,” remarked Barnhill, “and then went back in and added shadows using the three-dimensional model and a computer generated light. It looks like the actual environment. Part of my job is to ‘dirty’ things up with texture to compensate for the inherently clean environment of the computer.”

Once fine-tuned, the elements were assembled to produce one seamless image. “In the compositing phase,” explained art director Clark Anderson, “the tracking, animation, textures and lighting were all balanced together. Rhythm & Hues is one of the few completely digital studios, which means we can scan film into the computer, manipulate that image, add other images to it, and then output it back on film — all without any generation loss.”

Larry Weinberg sees more applications for the technology in the future. “Once you get people trained on the computer, there’s so much more you can do digitally in painting an image, grabbing real texture and spreading it around as you want, being able to combine backgrounds of one scale with foreground action of another. The only thing that’s holding us back is that there are not enough talented people trained to do it yet.”

That will be the next Evolutionary step.

COMMERCIAL SPOT: ELEVATOR TO THE STARS

article by Bob Peishel

Imagine how a delivery boy might describe his incredible experience inside the British Petroleum corporate highrise: “You should have seen this place! There were jets taking off, ocean liners, racecars — awesome!” Conceived by the W.B. Doner agency of Detroit and produced by Industrial Light and Magic, British Petroleum’s ‘Elevator’ commercial is a sixty-second adventure of epic proportions.

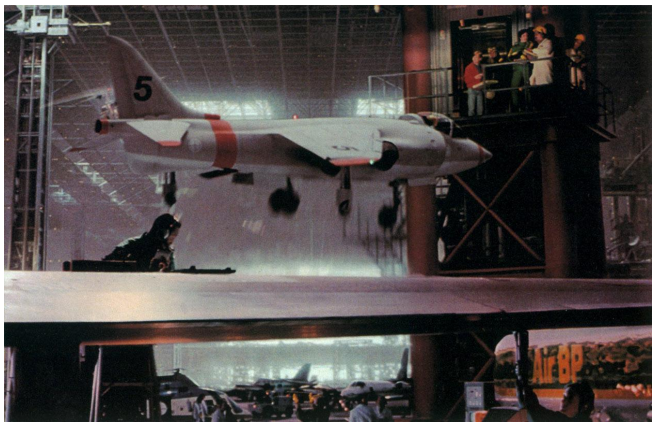
Directed by Matthew Robbins, the spot features a pizza delivery boy who arrives at the British Petroleum research and testing facilities. Entering the building’s elevator, he is startled to find that a scuba diver is also along for the ride. Things become more puzzling as the elevator makes its first stop, revealing the wide expanse of a busy airport where jets are taking off and helicopters are circling overhead. Successive floors prove to be even more astonishing as stops are made at a crowded ocean harbor, a multilevel raceway and an automotive service station bustling with customers. Feeling more than a little bewildered, the delivery boy makes his final stop at the tenth floor where he begins to float as if in a zero-gravity environment. The spot ends with the elevator doors opening to reveal an astronaut drifting weight-lessly in outer space, awaiting his pizza.

Slated to air in approximately two dozen countries, the commercial required meticulous preplanning by ILM. Visual effects supervisor Scott Squires worked with effects art director Paul Huston to determine which elements could be shot live-action, and which would require miniatures, matte paintings or digital effects. A primary objective was to produce elements that could be mixed and matched in a variety of ways to create different versions of the spot for its culturally diverse target audience. “There were twenty-two different language versions of the spot,” noted ILM commercial producer Clint Goldman. “So W.B. Doner had designed a commercial that would appeal to all of those different cultures — which is difficult, because there are things that just don’t play everywhere. For instance, in some of the versions of the commercial, the boy is not delivering pizza — which is why the pizza box doesn’t have ‘pizza’ written on it.” Because of the numerous languages that would ultimately be represented, text graphics were, for the most part, avoided. The exception was a ‘Research and Testing’ sign featured in the opening tilt-down shot on the exterior of the building — actually a matte painting. A blank element of the sign was shot and the ‘Research and Testing’ graphics incorporated into the sign digitally in each of the twenty-two languages.

One of the key challenges of the spot was that the grand-scale activity at each elevator stop had to appear as though it were taking place indoors. “We decided to shoot our live-action elements outdoors,” said Scott Squires, “to get the scope we needed. But to avoid a sunlit look, we filmed just after sunset to obtain even lighting.” While providing a less ‘out-doorsy’ look, a disadvantage of the approach was the brief shooting time it afforded. A twenty-one-day schedule was required to record all of the outdoor elements during peak twilight. After the

plate photography was completed, shots of the delivery boy in the elevator were filmed against bluescreen.

The elevator's first stop is at the 'Aviation' floor which features a Harrier jet taking off, planes in the background and helicopters flying towards camera. "We shot that at Sonoma Airport," stated Squires, "There were some real planes parked there, and a tanker truck which had been painted with the British Petroleum logo. The helicopters and Harrier jet were models that we shot motion control." Yusei Uesugi rendered matte paintings to represent the ceiling overhead, as well as planes resting on the tarmac. Finishing touches such as a heat ripple emanating from the jet were provided by the ILM digital department.



The British Petroleum 'Elevator' commercial — produced by Industrial Light and Magic — featured a variety of grand vistas, all supposedly inside a giant corporate highrise.

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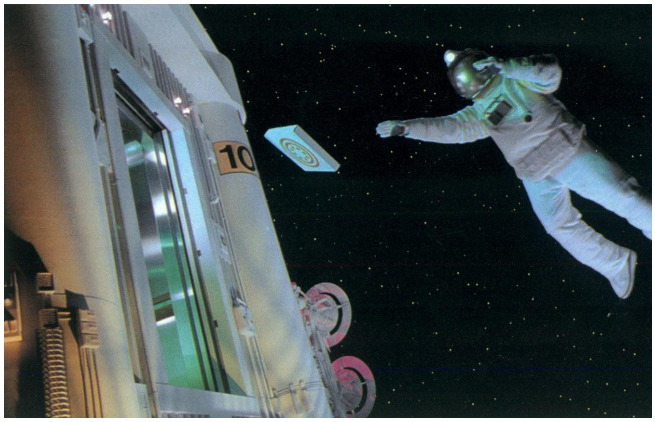

The British Petroleum ‘Elevator’ commercial — produced by Industrial Light and Magic — featured a variety of grand vistas, all supposedly inside a giant corporate highrise.

As the elevator makes its next stop at the ‘Marine Fuels and Testing’ floor, the doors open to reveal a variety of boats traveling across a large body of water. “That was done as a 4-perf motion control shot,” said Squires. “We shot it with real speedboats, a fishing boat and a little rubber raft out on the water.” An ocean liner and a hovercraft, also in the shot, were constructed by the ILM model shop. Rotating rods dressed with cotton were used to simulate the wakes of the bigger boats as they moved through the scene. A miniature ceiling piece was also built and shot through smoke to simulate an indoor locale. “After the scene is established, a scuba driver riding in the elevator jumps into the water. We filmed the diver bluescreen, jumping from the elevator set. We also shot water mixed with milk in front of a bluescreen to represent the splash as he hits the water.”

At the ‘Automotive’ floor, a female racecar driver exits the elevator and steps into a waiting vehicle. “For that shot, we actually had the elevator set and four cars at Sonoma Airport. We shot from a platform that was about twenty feet high; then we basically painted in the raceway to look as if it had multiple levels. There were also motorcycles driving on a flat platform that we matted in. The ceiling was a matte painting done by Craig Mullins.”

In the last sequence of the spot, the delivery boy and pizza box begin floating weightlessly inside the elevator. “He was on wires inside the elevator set,” Squires explained, “and the pizza box was on a rod with a motor to make it tumble and spin. The astronaut then floats into the shot; and he was on wires also. The stars in the background were digital effects.” Digital removal of the flying wires and rigs was realized by CIS–Hollywood.

CIS also contributed to the compositing effort. Though most of the shots were composited by the ILM digital team, CIS was enlisted to assemble a number of shots using their newly developed digital optical transform process. “The DOT process involves transferring the original film at more than one thousand lines of resolution,” said CIS vice president Godfrey Pye. “The compositing happens interactively, with the client sitting by the operator’s side. It is much like a traditional video session, but at double the resolution.”

From inception to completion, the British Petroleum ‘Elevator’ commercial involved more than six months of labor by the creative team at ILM. The result is a beautifully executed mini-epic seemingly more suited to the big screen than to the realm of television. It would, in fact, be seen theatrically in select overseas venues. “We tried to design the spot so that it would stand up on the big screen,” said Squires. “I think everyone has been impressed with it. In fact, Paul McCartney saw it over in England on the big screen and was impressed enough to set up a meeting with us about his next music video.”

QUICK CUTS: VIDEO HELL

article by Christalene Loren

Remember watching television when you were a child? Hour after hour you stared, fascinated, into that electronic screen. Finally, your mother would shout from the other room: “Turn that program off! It’s too violent!” The film, Stay Tuned, is that mother’s ultimate nightmare — and every video addict’s ultimate dream ride.

Directed by Peter Hyams, Stay Tuned offers the premise that television is really an instrument of the devil — something many of us have suspected all along. Evil comes to the suburbs when a mysterious salesman sells a satellite dish to our couch potato hero Roy Knable (John Ritter). When objects begin disappearing from their backyard, Roy and his wife Helen (Pam Dawber) investigate and wind up being sucked into hell through the sinister satellite dish. But this is an inferno Dante would never have recognized. Instead of fire and brimstone, the Knables find an editing bay at KHEL-TV. Here the devil’s tempter, Spike (Jeffrey Jones), is not a horned Mephistopheles, but a jovial video engineer directing the master switcher that hurls people into virtual realities. Spike fiendishly edits Roy and Helen into a series of dreadful television programs. Trying desperately to locate the hand-held remotes that will enable their escape, the couple has only twenty-four hours to discover an electronic passageway out of the devil’s network.

Thirty-three computer generated effects scenes were developed for the movie by Rhythm & Hues, a Los Angeles company specializing in digital film production. One of the earliest scenes occurs just after Spike has delivered the satellite dish to the Knables. His demonic connections are established when, at a dead-end road, the pavement splits open and his van drives into the fiery netherworld below. Both the van and the pavement were computer generated. “Originally, a miniature van was going to be used for the effect,” revealed visual effects producer Liz Ralston-Bugge. “But one problem with filming a miniature would be creating the illusion of the solid weight of a real van driving over broken pavement. By using computer generated imagery, we were able to tweak the computer model of the van, making it appear to be riding on the middle of the tires instead of the top of the tires, thus suggesting that the vehicle had real weight to it.”

Rhythm & Hues animator Peter Farson created the illusion of the pavement breaking apart. “I used the idea of plate tectonics to describe the motion of the groups of blocks that comprised the asphalt and then set that motion against another group of animated blocks. I let the computer create the illusion of random and fragmented movement by allowing the two motion sequences to play against each other.”

The fiery glow from the hellish pit was rendered by Michael Tigar using a volumetric program that distorts light through a specified atmosphere. “Another advantage to working with computer generated imagery,” explained Ralston-Bugge, “is that it gives you more control over things like lighting effects. With a miniature set, it is often difficult to match the lighting used in

the live-action set. In this case, it would have been difficult to control the smoky atmosphere needed to create the beams of light shooting up from below."

Another early effects scene shows Roy and Helen being sucked into the satellite dish. The actors were positioned in front of a bluescreen and then photographed. "That bluescreen plate was scanned by our RFX film scanner," said visual effects supervisor John Nelson. "Next, a three-dimensional mannequin was generated in the computer and the image of the actor was projected onto the mannequin, creating a digital element that we could animate. To achieve the effect that the actors were vaporized and sucked away into the video ether, the digital element was stretched in three dimensions so that it appeared to be bending backward until the image contracted to a point and disappeared. That element was then digitally composited over the live background."

In a program set during the French Revolution, Spike kidnaps Helen by enveloping her in the swirl of a voluminous cape. Both characters dissolve as they are 'switched' into another TV show. "Particle systems were developed by Dani Colojacomo to 'dematerialize' the actors out of the scene," Ralston-Bugge commented. "We erected a portable bluescreen on the set and the actors were shot in place to get the plates. Again, the plates were scanned into the computer and then texture mapped onto mannequins. This time, when we constructed the mannequin, we designed the cracks that would appear when it broke up. As the mannequin is shattered, one half of the image appears to be falling apart while the other half is still standing. The rotating particles, when viewed in detail, are actually made up of the rendered portions of both the cape and the actors."

Collaborating on the French Revolution sequence was Rhythm & Hues art director Clark Anderson. "The role of the art director is to design the effects and integrate them back into the live-action," Anderson remarked. "In the French Revolution sequence, we used the leading edge of the swirling cape to define the direction of the particles before they dissipated. We have integration tricks that we use, adjusting the lighting and the texture and matching the color with the live-action footage. If there is motion, we can introduce motion blur as well. Our final effects image has a 2.35 aspect ratio that computes to 2K resolution — which makes the integration with the live-action film footage acceptable. We have a great deal of control, but this also creates a problem in that we can now make things look too real. To avoid that, we add imperfections into the sequence. Sometimes we apply stains or we utilize a resolution under 2K to slightly soften the image. Reality itself is flawed; so if those flaws aren't in the shots, the sequence just doesn't look right."

Spike is eventually short-circuited with his own remote, and Roy and Helen are hurled back into suburbia. The satellite dish is subsequently recalled by its owner in a meltdown sequence executed by animator Jean Cunningham and programmer Mark Henne. "The meltdown effect was achieved by adapting 'Flubber,'" said Henne, "one of our software programs designed by Larry Weinberg. Flubber generates effects resulting from gravitational and natural forces. Again, a geometric cage was constructed around the image of the satellite dish. Applying Flubber to the geometric cage pulled the cage downward. We kept getting a 'pizza crust' shape around the edge of our final image that was caused by the curved rim on the original dish. We were able to get rid of that by creating another corresponding dish without a curl on the rim.

The computer was able to average between the two models frame by frame until the ‘pizza crust’ effect was reduced.”

The illusion that the dish disappears down a hole was simulated by using a ‘bump map’ which changes the way light reflects off of a surface. “A ripple in the mass was created as it passed over the concentric rings of the bump map,” Henne continued. “This motion helped to create the effect of the mass flowing down a hole introduced underneath the melted form. Last of all, a swirl of smoke was kissed in from the live-action sequence to give a realistic touch.”

Objects and people are sucked into hell via a sinister satellite dish in the Peter Hyams comedy, Stay Tuned. Rhythm & Hues employed a range of digital techniques for the film’s effects work, which included a closing shot of the dish melting into a puddle.

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The fantasy elements of Stay Tuned provided an ideal opportunity for Rhythm & Hues to stretch the limits of their expanding computer graphics capabilities. It also provided Peter Hyams with imagery that was particularly suited to the video environment of his movie. “A number of the effects on this project could only have been achieved digitally,” John Nelson concluded. The Rhythm & Hues team enjoyed their foray into video hell — and, of course, it was just a coincidence that their last job number for the project was ‘666.’

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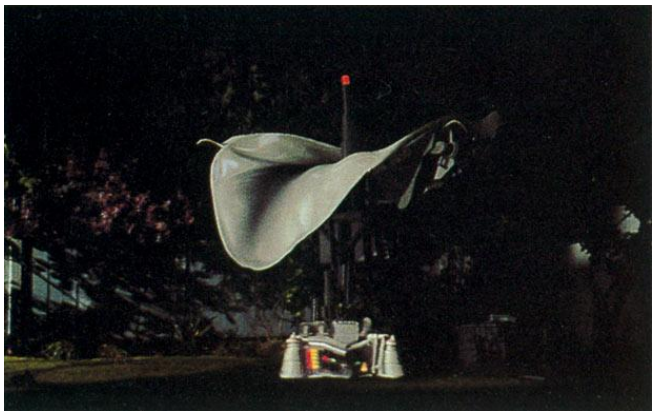

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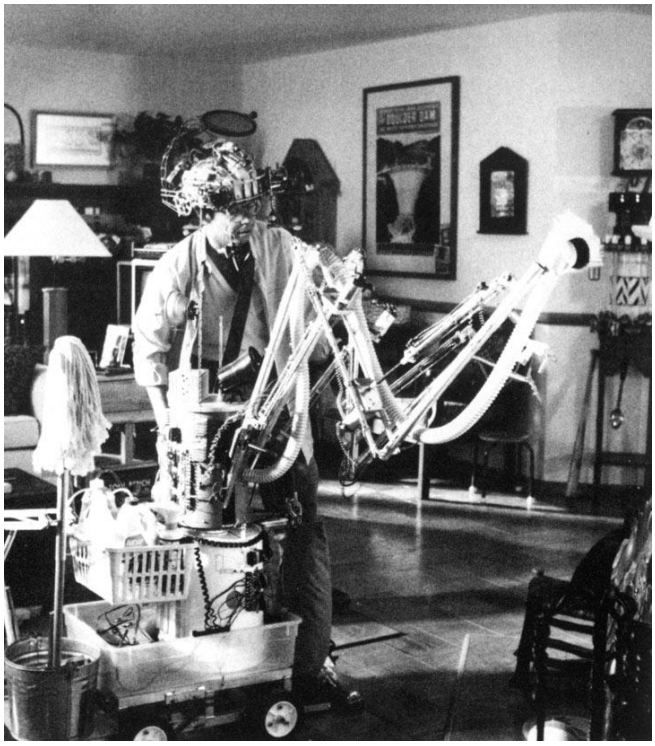
BLOWING UP BABY

article by
Jody Duncan

image

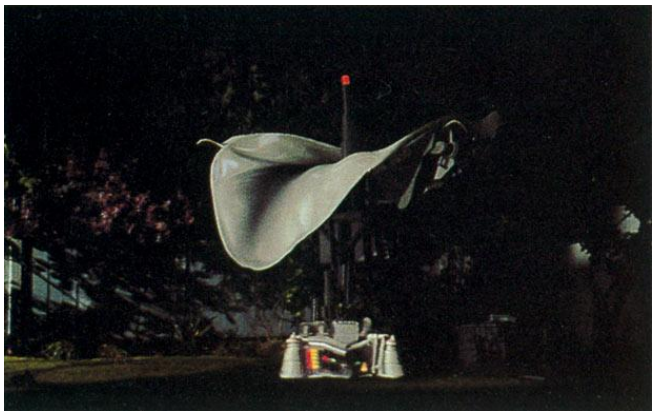


Honey, I Blew Up the Kid — the sequel to Disney's hugely popular Honey, I shrunk the kids — reunited several key members of the original film's effects team. Director Randal Kleiser, sporting a crew cap embossed with the sequel's original title — eventually deemed too offputting by studio marketing types — lines up a shot.

Honey, I shrunk the kids, Disney's 1989 release, had been something of a surprise. Filmed on a relatively small budget in Mexico by first-time director Joe Johnston — a knowledgeable effects artisan — the comedy nevertheless struck a chord with audiences and went on to become a modest hit in the theaters and, later, in home video release. Not since its late '50s and early '60s releases such as The Shaggy Dog and The Absent Minded Professor had the Disney studio offered a film that was, well, wackier or more unabashedly aimed at the family audience. The premise of the film had been a simple one: a brilliant, but eccentric inventor named Wayne Szalinski toils in his makeshift attic laboratory building devices that range from a multipurpose shaving helmet to a cannon capable of shrinking objects. A fantastic adventure begins when an accident with the shrinking cannon results in Wayne's two children and a couple of their friends being reduced to minute specks and dumped into the family backyard. As Wayne and wife Diane conduct a desperate search, the kids trek through a jungle of giant grass blades and battle huge insects and torrential 'rainstorms' caused by lawn sprinklers in their struggle to make it across the yard and into the relative safety of their house. The requisite happy ending finds the kids returned to proper scale and harmony restored in the Szalinski family.

Wayne Szalinski (Rick Moranis) returns as the lovable, but eccentric scientist whose bizarre inventions include robotic household appliances and a multipurpose utility helmet In the first film, an accident with Wayne's most ambitious invention — a shrinking cannon — resulted in the Szalinski kids being shrunk to gnat size.

This past summer brought us Honey, I Blew Up the Kid, a sequel that stuck to the formula which had contributed to the popularity of the first film. This time out, the Szalinski's blond-haired, chubby-cheeked two-year-old is transformed into a destructive one-hundred-twelve-foot toddler when an experiment with an enlarging cannon goes awry. Unlike the first film, the new Honey was filmed almost entirely on Disney soundstages, with location forays venturing no further than Las Vegas and nearby Simi Valley. While reuniting a few key members of the original's effects team, the sequel took another departure by assigning



In the sequel, Wayne has sold his shrinking and enlarging technology to Sterling Laboratories where he has been placed on staff, but essentially divorced from the project. While tinkering with the lab equipment on his day off, Wayne makes a breakthrough and inadvertently transforms his baby son Adam into a seven-foot toddler.

directorial duties to Randal Kleiser, a seasoned director, but one with a limited effects background. “One of the reasons I was interested in this project,” Kleiser observed, “was because I had been looking for an effects film. I have a real love and interest in visual effects, and I wanted to learn more about them. What better way than to do a film like Honey, I Blew Up the Kid?”

The project had actually started under director Jeremiah S. Chechik. Key personnel had been hired, designs had been approved and storyboards for the entire film completed when Chechik left the film and Kleiser came aboard. Chechik’s departure was prompted primarily by differences with the studio over the scale of the picture. “Jeremiah’s vision tended to be more grandiose than what Disney wanted to spend,” explained Kleiser. “I think he wanted to make the film bigger than life — the David Lean version of the movie. Basically, what I did was come in and scale everything down.”

Already on the film before Kleiser’s arrival was visual effects producer Thomas G. Smith, who had designed and orchestrated the effects for the original Honey. For the sequel, Smith once again opted for an effects approach that had proved artistically and financially sound in the first film, dividing the assignment among no fewer than a dozen effects companies. Not only did Smith feel more comfortable with the multi-team approach, the total number of effects shots required to sell the idea of a giant baby seemed to demand it. “When Randal came on the film,” said Smith, “things were redesigned and the number of visual effects shots increased — not because of Randal, but because as we began to examine the story in more detail we found we could really only tell it using a lot of visual effects.”

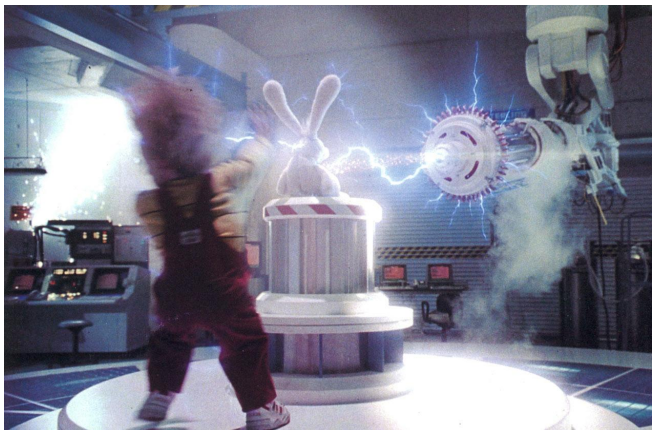
Smith brought on effects coordinator Michael Muscal, another alum of the original film, to orchestrate the effort between the various companies. “We started with around one hundred six shots,” Muscal noted, “and we ended up with two hundred ten — one hundred eighty-five composite or miniature shots, and twenty-five rear process shots. We were on a pretty tight production schedule, so we were not only concerned about the number of shots, but also about the time factor. Tom doesn’t like to put all of his effects eggs in one basket; so we divided up the work, just as we had on the first movie. It was a formula that had already worked well for us.”

Not surprisingly, Disney had at first been strongly in favor of awarding the entire effects assignment to their own in-house facility, Buena Vista Visual Effects — especially since they had recently made a substantial investment in equipment. “Honey was the first major Disney effects film that had come along since our restructuring,” BVVE visual effects supervisor Harrison Ellenshaw commented. “In the past, the facility had lacked the equipment, and often talent, to be taken seriously — even by the studio itself. In fact, all of the effects work on Honey, I shrunk the kids had been done by outside companies. Ray Scalice and I had been brought in as ‘new management’ in the summer of 1990, and we had invested a lot of time and money in the operation — so we were ready.” Although Smith’s commitment to dividing the effects among a variety of facilities precluded giving the entire job to Buena Vista, the company did ultimately become the primary effects provider. “In the beginning, Tom gave us forty-five shots out of about a hundred. And in the end, we wound up doing about ninety shots out of almost two hundred. So we did about fifty percent of the show — which was the biggest piece of the pie.”

While Buena Vista carried the biggest load, a number of other companies were to become major contributors to the project, among them Peter Chesney's Image Engineering, which provided a variety of large-scale mechanical props — as they had for the original Honey. Also returning to create the film's animation effects was John Van Vliet of Available Light. Perpetual Motion Pictures, who had shot the memorable bee flight sequence in the first film, came back to contribute a number of motion control elements, and Hollywood Optical returned to complete a number of composites. Newcomers to the Honey team included CIS–Hollywood and Sony High Definition, both of which shared compositing duties with BVVE. Live-action motion control shots were assigned to The Chandler Group, while models for the film were built by Stetson Visual Services and Design Setters. 4-Ward Productions realized a number of miniature shots; computer graphics effects were achieved by Kleiser-Walczak Construction; and, finally, Kevin Yagher Productions created some cable-controlled puppets, as well as a seven-foot baby suit. Lending their technical and artistic expertise to the overall effort were director of photography John Hora, director of visual effects photography John Fante and production designer Leslie Dilley.

Although the teams at each of the facilities had input into the creative process, the film's effects originated — for the most part — with Tom Smith. "I designed all of the shots," Smith explained. "Then, John Fante and I shot the elements and turned them over to the various houses. There were a few cases where we just told them what we wanted and they went off and did it, but for the majority of the shots we provided the elements.''

The nearly year-long production schedule included a little more than four months for principal photography, followed by two phases of postproduction — one period for shooting miniatures and another devoted to shooting the baby on a bluescreen stage. Originally slated for a March release, the film was eventually pushed back to summer, which afforded the filmmakers an extra three months at the end of their production schedule. "The extra time allowed us to go back and redo some of the shots we weren't crazy about," Muscal noted. "In the initial rush, we had shot some of the plates just against black, for example. During this last period, we were able to go back in and add elements to certain shots, just to make them better. It was a luxury you rarely have in effects work."



At the lab, Wayne attempts a matter expansion experiment on Big Bunny, his son's favorite stuffed animal. During the experiment, Adam wanders onto the target platform and is accidentally struck with a ray from the enlarging cannon. Animation effects such as ray beams and electrical fields were produced by Available Light.

The enlarging effects of the blast are not apparent until later when Adam comes in contact with the electromagnetic field of a microwave oven and instantly grows to seven feet tall. Of primary concern to the filmmakers was assuaging the audience's fear for the baby as he is exposed to electrical phenomena. To that end, John Van Vliet of Available Light was instructed to render electrical effects that would appear nonthreatening to the child.

Throughout the production schedule, one of the major challenges was dealing with a star who was only two years old. Shooting effects plates — which typically require great precision and careful preplanning — was particularly demanding because it involved infants whose precision and preplanning skills were virtually nil. Directing the baby — twins Daniel and Joshua Shalikar alternated in the role — was a job that fell both to Kleiser, who directed the main unit baby sequences, and to Tom Smith, who directed the twins during the extensive bluescreen shoot at the end of the schedule. For both the main unit and bluescreen shoots, an array of tricks and games was used to persuade the babies to perform. "We had two baby wranglers who would make games out of the actions we needed the children to do," Kleiser said. "Everybody would take a turn doing the action in front of the camera, but we'd only roll camera when it was the kid's turn. In some cases, their action was just improvised and we would go with whatever the child did. Rick Moranis, who comes from an improvisational comedy background, was very adept at going off what the kids were doing. If there was something specific the baby had to do, I would always try to establish the baby's action first and then get him out of the shot somehow."

Directing the babies became easier as they matured. "In the beginning they were like five-hundred-pound gorillas that we had to follow with the camera," Kleiser said. "But they got to where they would hit marks and follow directions and even act. One of my favorite moments in the film is towards the end where the baby embraces the mother and he says, 'Are you crying?' She nods and says, 'I'm crying because I'm so happy.' The baby showed a lot of concern in that scene and he was able to do it over and over again. So the child's performance went from 'whatever happens' to a really extraordinary moment with a child actor, all in a few months."

On the bluescreen shoot, Smith approached the 'baby problem' by wearing a variety of funny hats and playing a kind of 'follow the leader' game from off-camera. The idea of using twins had been to maximize the amount of time the baby could be in front of the camera, but that plan eventually gave way to the realities of dealing with small children. "The twins would both come onto the set at the same time," Smith explained, "and once the child in front of the camera burned out — which would take only about fifteen minutes — we'd change to the other one. In the beginning, we had these illusions that the reason you get twins is because you get double time — one can be resting in the trailer while the other one is working — but it doesn't work that way. If one leaves the trailer, the other one wants to leave also. So as it turned out, we didn't get any more time, but we probably got more useful time out of the babies. I worked with them every day, and they were both terrific. They had different personalities, but they were both good performers."

Honey, I Blew Up the Kid opens in a Las Vegas suburb where the Szalinski family has relocated. Wayne Szalinski (Rick Moranis) has sold the patent for his incredible shrinking cannon to Sterling Laboratories, a large technological firm. Shuffled aside by the corporate minds at the lab, Wayne is now merely an impotent observer of endless tests to expand matter with a revised

version of his original invention — tests which have so far been unsuccessful. While caring for his toddler, Adam, Wayne hits on an idea that explains why all the matter expansion tests have resulted in failure. Anxious to prove his theory, Wayne rushes to the lab on his day off, with Adam and older brother Nick (Robert Oliveri) in tow. While endeavoring to enlarge Big Bunny — Adam's favorite stuffed animal — Wayne is distracted by a malfunction of the equipment and fails to notice when Adam himself walks into the line of fire just as the enlarging ray strikes the target platform. The calamity does not become apparent until the trio returns home where, after coming in contact with an electromagnetic field from a microwave oven, Adam suddenly grows to seven feet tall. With each new exposure to an electromagnetic source, Adam continues to expand until, finally, he is a one-hundred-twelve-foot toddler stomping through a little playground known as Las Vegas.

In an early sequence at Sterling Laboratories, Hendrickson (John Shea) — one of the bigwigs at the facility — conducts an enlarging experiment on a crystal. The crystal, rotating on a platform, begins to bulge and expand, and then explodes, splattering gooey blue matter all over the scientist's face. Both the crystal and the rotating platform were computer generated by Jeff Kleiser — brother to Randal — and Diana Walczak. Though computer graphics effects in the film were minimal, they were part of what had attracted Randal Kleiser to the project in the first place. "I had become very interested in digital effects while shooting Flight of the Navigator," Kleiser revealed. "We had used some CG techniques on that film — which my brother had done — and since then, I'd been looking for another project that we could do together using computer graphics techniques."

The Kleiser-Walczak team started with a real six-inch crystal. "We put that crystal on our three-dimensional digitizer," Jeff Kleiser explained, "which allowed us to get its shape into the computer. After that, we shot the background plate with no crystal in the foreground — just a closeup of Hendrickson looking at empty space. On cue, we sprayed blue hair gel onto his face — which was the point at which the crystal was to explode and splatter him. We digitized that background plate and then we created the animation of the crystal rotating on the platform. We animated it to stretch and grow and become kind of jello-like, then explode. Also, to really put the crystal into the scene, we refracted each frame of the background image through the crystal — you could see the background through the crystal, refracted accurately."

Computer graphics were also utilized to enhance Adam's initial growth spurt at the microwave oven — the only scene in the film in which we witness the child's expansion. Originally, the production had planned to do the growing effect by means of a simple optical zoom. On examination, however, it became apparent that the optical zoom would produce a rather mundane effect. "Randal wanted to do something a little more striking," Kleiser commented, "so he asked us to come up with a way to make the baby appear to grow that was dynamic. What we recommended was an expansion of the baby that was sequential, traveling down from his head to his feet. It would be like the effect you get when you blow up a long balloon — it starts to grow at one end and then extends down the length of the balloon." The CG team first digitized the Vistavision original negative of the baby against bluescreen, then did a digital bluescreen removal and matted the image over a background plate of the Szalinski kitchen. "We had to solve a lot of problems with the background. One was that the camera move they had

done on the set was too fast — they decided they wanted it half the speed. So in between each of the existing frames we created an in-between frame to make the move twice as long." After digitizing the plates, Kleiser and Walczak began the computer manipulation, first testing the effect at video resolution. "Frank Vitz, our longtime associate, wrote a software program that allowed us to create a gridded surface. We mapped each frame of the baby onto that grid, then distended it using this program. We could make it stretch out at the top and remain the same at the bottom, sequentially expanding it from top to bottom."

In addition to its computer generated effects, the sequence where Adam grows at the microwave required animation effects to represent the 'electromagnetic flux' featured throughout the film. Most of the film's animation effects — which included cannon ray beams, as well as the electromagnetic field effect — were rendered by Available Light. "In all," said John Van Vliet, "we did thirty-nine shots on the movie. Most of them involved designing the shot from the ground up, all the way through to optical. The bulk of it was hand-drawn animation — standard electricity, plus particle beams." Van Vliet had created similar effects for the original movie; this time out, however, the filmmakers asked for electrical effects that were bigger, better and 'baby friendly.' "At first," Van Vliet commented, "no one was quite sure what the 'electronic wind' should look like. Their main concern was that it not look like it was hurting the baby. Tom and Randal were always saying: 'Remember, the kid can't be hurt. People can't be worried about us nuking the child.' They told us that it had to look like it was fun for the kid. So we tried to put body english into the electrical effect that didn't look too nasty. We kept it off the baby's eyes and we slowed it down a little bit. We did a series of drawings and then we started doing motion tests, finally ending up with this wispy, tendrily stuff that comes out and turns into electricity — sort of every person's nightmare about microwaves come true."

At seven feet tall, the naturally boisterous Adam becomes an unmanageable giant. For scenes depicting the oversized baby inside the Szalinski home, production designer Leslie Dilley worked with the visual effects team to devise an in-camera, split-scale approach that was enthusiastically endorsed by Kleiser.

Animation effects were also featured in the sequence at the lab in which Adam is hit with a ray from the enlarging cannon. The sequence consisted of three quick cuts — the first, a shot of Adam approaching the platform to retrieve Big Bunny. “The second cut is where the particle beam hits him,” Van Vliet said, “which makes his hair stand up on end. And at the same time, the bunny’s ears go up. After they had shot it, they decided they wanted four frames in between the hair raising and the bunny ears raising, so we had to split-screen in a new bunny head. The difficult part was that the bunny was halfway behind the child’s curly head, which was a worst-case scenario for doing a split-screen. We also had to put in reflections on the podium and on the rabbit to help cover up the surgery. It had the potential to be a hideously bad-looking optical, but we managed to put everything together. Nancy Evans did the articulate matting on that and Beverly Bernacki did the compositing.” In the third cut of the sequence, the beam from the cannon blows the child off his feet and out of frame. A little person, costumed in the baby’s overalls and a fright wig, performed the stunt.

The split-scale technique required painstaking alignment of full-size background sets — where the adult actors would be positioned — with miniature foreground sets featuring the baby. Always taxing, the split-scale approach was particularly demanding on a film that required strict positioning of actors — twins Daniel and Joshua Shalikar — who were only two years old. / Set decorator Dorree Cooper positions tiny props on a miniature replica of the living room set.

At seven feet tall, the typically temperamental Adam becomes a destructive, out-of-control menace raging through the Szalinski household. Three different techniques were employed to create the illusion of the seven-foot-tall baby, including matting bluescreen shots of the real baby into live-action plates and utilizing a ‘baby suit’ worn by a tall actor. The majority of the scenes, however, were achieved utilizing forced-perspective and split-scale sets. Before the project had even been greenlighted, Buena Vista had conducted numerous tests to determine the feasibility of the split-scale approach. “We did some tests very early on,” said Ellenshaw, “just so the studio could see if these shots could even be done. They were still deciding whether or not they were going to do the show and whether the effects could be believable enough to support this conceit of a giant baby. We had proposed that all interiors and some exteriors which featured the seven- and fourteen-foot Adam should be accomplished using split-scale and Schufftan techniques. Steve Brooks, one of our supervisors, spent a few months designing and shooting about thirty of these shots as tests.” Production designer Les Dilley and art director Ed Verreaux had designed and built a split-scale living room set for the tests — both a full-scale and corresponding half-scale set. “Preproduction tests can be a two-edged sword,” Ellenshaw asserted. “If you fail, you lose the job; if you succeed, the studio wants more. Fortunately, the results of our tests were stunning.” After

additional tests that included bluescreen composites and real-time motion control shots, the studio gave the project — and BVVE — its blessing.

Randal Kleiser was particularly enthusiastic about the old-style, split-scale approach. “I’d always loved the film Darby O’Gill and the Little People,” Kleiser enthused. “I had been fascinated with the use of scaled sets ever since I was a kid, so I was really interested in trying to replicate that effect for this movie. There was some resistance to it. The production people thought we would never be able to get the baby and the actors in the same shot — they thought it would take forever. But I made a commitment to do the seven-foot baby sequence almost entirely with scaled sets — which was a very big gamble; because if it didn’t work, we would have no out. Luckily, it worked.”

Among those who harbored reservations about the split-scale approach was Tom Smith. “I was not too happy about the idea of using split-scale,” Smith admitted, “because it creates problems when you are doing visual effects. It also takes a lot of production time, and it is all first unit — which costs a lot more money than a visual effects unit. It is very time-consuming stuff, with everyone standing around while you line things up. And you have to light it at extremely high light levels so you can shoot with your lens stopped down to get the depth of field. So there were a lot of disadvantages to split-scale. But when it worked, it worked like gangbusters. No matte lines, first generation — absolutely perfect.”

Responsibility for the design and construction of the split-scale sets fell primarily to Leslie Dilley. Though at first reluctant to work on a sequel, Dilley had eventually come on board as production designer when Disney agreed to let him direct second unit as well. Long before beginning the construction, Dilley worked with Ellenshaw’s team to develop sets and scales that would allow the real baby and the real actors to perform in the same general space, while creating the illusion that the baby was seven feet tall. “In order to have the baby and the adults interacting with each other without using an optical split,” explained Dilley, “we built one part of the set full-size, and then the section of the set the baby was going to be in was built at forty-three percent its normal size. We would have to align all the moldings in the ceiling and the floor up with the full-size set. And then we would position the people relative to the camera angle. Technically, it all boils down to projecting a lot of lines back to a camera position with a specific camera angle in mind and lining up all the things in the room, both architecturally and in the set dressing — for example, miniature pieces of furniture in the foreground and full-size in the background.”

One of the limitations of split-scale is that it allows for only one camera position per set. “It is all based on a single camera angle,” Dilley said, “so there are problems — tracking the camera is very difficult because the alignment points change. It all has to be planned very carefully. Randal and I storyboarded the sequence ourselves and chose the angles for each of the split-scale elements. To make it even more complicated, the scaled set and the full-size set were not usually interlocked in a straight line from top to bottom. The illusion was better if the line traveled all over the place — north to south and east to west to suit the geometry of the set, with the splits next to carpet breaks or chairs or angles in the walls.”

Although split-scale sets were utilized for the majority of effects shots inside the Szalinski home, several bluescreen composites were also required. For the first full reveal of seven-foot Adam, The Chandler Group executed a motion control pan on the full-size set, then repeated the move on the baby against bluescreen. Visual effects producer Tom Smith — who designed and oversaw all of the effects shots — served as director of the extended bluescreen shoot at the end of the production schedule.

Another difficulty in shooting on the split-scale sets was keeping eyelines on target, since the actors would often have to appear to be looking at the baby in one position when, in reality, the baby was positioned several feet to the left or right. To clarify the eyelines for the actors, numbered signs were concealed throughout the set. “If the baby went to the couch,” Kleiser recalled, “we’d yell ‘Three!’ and the actors would look at the sign that said ’3.’ If he went to the fireplace, they would have to look at the number four sign, and so on. So we’d call out the numbers and the actors would respond accordingly. The A.D. was keeping all this straight by way of the video assist, watching the monitors to make sure the eyelines were lining up correctly.”

While Disney’s own Buena Vista Visual Effects was responsible for a majority of the film’s composites, electronic compositing teams at CIS-Hollywood and Sony High Definition were brought aboard to composite a number of shots quickly and inexpensively. Recent developments in digital video technology were implemented to provide final composites that maintained the resolution and quality of traditional film composites. Wayne and Nick (Robert Oliveri) confront the giant baby in a shot assembled by Sony.

Complicating the shoot even more was the fact that the actor most prominently featured on the split-scale sets was only two years old. “It would have been hard enough with adult actors,” Kleiser said, “but with a baby it was really tough. The main reason it worked was because I came up with the idea that whenever the baby appeared on a split-scale set, he would be involved with a prop. That way the baby never had to follow eyelines. We’d put a whole lot of props in there, hoping he’d pick them up and look at them. So we’d get him interested in these props and let the actors worry about the eyelines.”

Almost all of the split-scale scenes take place inside the Szalinski home, where Nick, Wayne and Diane (Marcia Strassman) attempt to subdue the unruly giant. Eight split-scale sets were built, representing various areas of the house. In addition, the entire interior was built both full-size and in miniature. The scaled sets were used in two ways. One was to line up the miniature area of a set with the full-size area on the same stage so that the different scales would not be apparent through the camera lens. The second was to optically combine footage shot on the full-size set with the adults with footage shot of the baby on the miniature set, creating a soft split that would seamlessly blend the two separate plates.

The most impressive series of shots in the sequence involved the elder Szalinskis chasing the baby throughout the house. “They chase him through the kitchen and dining area and out the back door,” said Dilley, “running in circles. There is a patio door on one side and a kitchen door on the other. We shot the adults going out the patio door, passing the window and then coming in the side door. As soon as they went out the patio door, we did a whip pan to the back door, cutting to the miniature set where we had shot the baby coming in the other door. Then we did another whip pan on the miniature set and cut back to the full-size set. That was an example of two different scaled sets working together with careful intercutting. In that case, both the full-size and the miniature sets were on the same stage, in the same alignment so that people wouldn’t get too confused — they were lined up and facing the same way.”

In some of the split-scale work, optical enhancements helped to sell the effect. “Split-scale combined with some optical is really the ultimate,” Dilley noted. “There was one shot where the baby knocks a cuckoo clock off the wall and the mother bends down to pick it up. That was a split and masking situation. Optical helped a lot because we couldn’t have the mother cross around in front of the miniature set. So we had to do it in two separate pieces. For the first cut, the clock was knocked off the wall and dropped on a miniature set. Then the mother bent down to pick it up off the floor and, as she bent, we cut to Rick Moranis for a moment. When we cut back to the mother, she is picking up the pieces of the clock on the full-size set. So it was shot on two different sets and optically combined, which really made the effect work.”

Another split-scale scene had the family members trying to distract Adam by leading him in the ‘Hokey Pokey.’ At one juncture, the spectacle is played out behind Diane as she tries to dismiss a nosy neighbor from her front door. “When they are doing the ‘Hokey Pokey,’” noted Tom Smith, “we had the baby doing it in split-scale. We had the miniature house put in as a forced-perspective set with the real house — so the baby was up close on an elevated platform, the camera was shooting down, and the full-size set was in the background.”

Although most of the scaled sets represented interiors of the Szalinski house, one split-scale shot was required for a scene in which Nick and Wayne return to the lab in an attempt to restore Adam to his normal size. “The baby was in the foreground on a miniature set,” Smith explained. “The floor of that smaller scale set was blended with the floor Nick and Wayne were standing on. The three of them go around the corner and for a moment the baby goes out of frame. When you see the baby again, it is actually an actor in the baby suit. The shot works beautifully.”

While the split-scale sequences demanded a great deal of preplanning, laborious setup times, precise lighting and considerable expense, everyone involved came away from the experience convinced that the results were worth the effort. “If the whole show had been done bluescreen,” noted Buena Vista Visual Effects producer Carolyn Soper, “by the time you were a third of the way into the movie, the audience would be on to you. But by mixing in the split scales, we were able to trick the audience just enough to keep them from knowing exactly what they were looking at.”

“As for the expense,” Ellenshaw concurred, “it also costs a lot of money to shoot in front of a bluescreen and composite a bluescreen shot. And the baby still had to hit his marks, whether it was split-scale or bluescreen. With the split-scale, we could get a shot in the morning, get it back by the afternoon and look at it on the big screen. If it wasn’t right, we could reshoot it at the end of the day. So we could get a shot a day; and toward the end, we were setting up the split-scale shots in just a little more time than it would have taken to set up a normal shot. So I’m a big fan of the split-scale stuff. If we had to do it over again, I would still use it for as many shots as we did — if not more — because when it works, it looks so damn good.”

In spite of the success of the split-scale effects, a limited number of bluescreen composites were also required for shots of the seven-foot baby inside the Szalinski home. The first reveal of the seven-foot Adam, in fact, was a motion control bluescreen shot. The camera pans with Rick Moranis and Robert Oliveri, rounding a corner to reveal the smiling, man-sized baby, who then walks off-camera to the right. The original panning move was shot motion control on the set, then duplicated on the bluescreen stage. The Chandler Group had been commissioned to shoot all of the motion control setups that required portable equipment. John Scheele and Don Baker divided supervising responsibilities, with Dave McCue handling the opticals. “We were contacted primarily because of our track record with live-action motion control,” said Baker. “Our equipment goes out of house quite frequently for commercials and Tom knew that was one of our greatest strengths.” The most challenging aspect of the motion control assignment was scaling the baby to the various live-action backgrounds. “We tried to shoot the baby’s performance first, then scale up the live-action so that the baby would be in a proper scale relationship with the background. The unique problem we faced was that the baby was usually shot at sixty frames per second — to make him seem bigger — and the backgrounds were shot at the regular twenty-four frames per second. So there were not only different scale relationships in terms of how far the camera traveled, but also the speed with which the camera traveled. We were scaling not only size but time, which was a big problem.”

For the first shot of the big baby, Chandler set up their motion control rig on a full-size interior living room set built on Stage 2 on the Disney lot. “The set had breakaway walls that allowed us to come in on one side and lay a motion control track diagonally into the room,” said Scheele. “We tracked with Nick and Wayne as they stood up from behind the couch and walked forward to get their first full look at the big baby as he comes out of the kitchen. There was a panning and tilting move as we came forward on the track, looking up to where the baby would be in the shot; then a reverse move, pulling back to see Nick and Wayne in the shot with the baby. Then the baby walks out of the room. We shot Rick and Robert with a bluescreen set into part of the kitchen which allowed us to photograph the sections where their heads and bodies crossed over

into the baby’s space. Later, on a big bluescreen stage that was set up in Van Nuys, we shot the baby on mirrorplex so that he was surrounded by blue. He was choreographed and directed — as well as you can direct a young kid — to walk along the right path.”

Over-the-shoulder shots of the seven-foot toddler were often achieved with a full-scale baby suit built by Kevin Yagher Productions. Adult actor Alex Daniels, who performed inside the suit, studied the Shalikar twins in order to duplicate their actions and mannerisms.

During the bluescreen filming of the initial ‘giant Adam’ shot, Tom Smith had to pull out everything in his bag of tricks to coax a performance from the child. “Take after take the baby would walk too fast,” said Smith, “so he would be gone by the time the camera panned to him. We put lines down on the floor and put out little toys for him to look at — anything to hold his interest and slow him down a bit. On one particular take, the baby was coming around the corner, watching me, and I realized he was moving too fast again. I motioned for him to slow down by doing kind of a slow, tip-toe movement — and he suddenly started imitating me. So in the movie it looks like the baby is walking normally and then he sees Nick and Wayne and starts walking like he is creeping up on them — as if they won’t notice a baby who is seven feet tall! It’s a funny moment in the film, and it was a total accident.”

Even with sophisticated motion control setups and cleverly scaled settings, certain shots of the seven-foot toddler could be achieved only with an adult actor in a suit. Kevin Yagher was tasked with building the baby suit which would be used primarily for quick, over-the-shoulder shots of Adam. “The suit was never intended to be seen for long,” Yagher stated. “We didn’t want to cut from the live baby to our baby suit and back to the live baby — because without at least a year of preparation we could never come up with anything that realistic. As it turned out, we only had two-and-a-half months to build the suit. There was a real rush because the children were growing so fast. They first came to my shop in January, and we didn’t see them again until June — and in those few months they had lost most of their baby fat, so they already looked quite different.”

Yagher began by taking extensive measurements of the twins. “We measured every part of their bodies, allowing some for growth. We also took hair samples and did hand casts. We documented everything about them physically, from pictures of

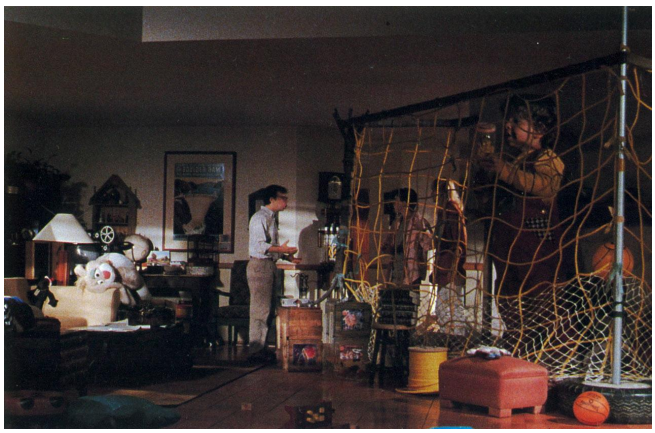
Although front views were limited, the suit featured a servo-operated head capable of a variety of facial expressions. Yagher readies the articulated head for employment on the set.

Constructed out of foam rubber, the suit’s restricted ventilation necessitated that air be pumped to the actor inside during long stints on

their teeth to the color of their eyeballs. After we had all the measurements, we drew out a profile and front view of the kids. Then we scaled up our drawings to lifesize — the real size of the babies. From that we did a mockup lifesize baby sculpture. We used that sculpture as a maquette to build the suit around. It was also used as a stand-in for the baby, after we molded it and painted it up and put a wig on it. They would put it in as they were lighting the set, since they couldn't get the baby to stand still."

With the maquette completed, Yagher then did a lifecast of Alex Daniels, the actor who had been cast to perform in the suit. To prepare for the unusual role, Daniels studied the Shalikar twins, both in person and on video. "We had hours and hours of footage of the children running around," said Yagher. "Alex studied them like crazy and he got really good at stumbling while walking or falling over like they did. He picked up on all their little mannerisms, too. We had auditioned a lot of people — we had, at one point, a whole roomful of grown men acting like babies, which was really sick. Alex was finally chosen because he put the most heart into it. He was only six-foot-three; but with the baby-suit head on, he was about seven feet tall. We took casts of his head, hands and body, and made fiberglass copies of him that came apart in sections. Then we began to sculpt on top of that body form."

the set Robert Oliveri assists with the procedure. Yagher's team was responsible for the baby puppet between takes. For the baby scenes, skilful manipulation of the baby's face and body parts enabled the puppeteers to achieve highly realistic effects without always having to rely on complicated opticals or split-scale sets.



After a destructive romp through the house, Adam is at last contained within a makeshift playpen. The playpen and baby were positioned in a foreground miniature, while the adult actors performed on a full-size living room set in the background. Through the two-dimensional eye of the camera, the adults and baby appeared to be on the same plane. Scenes were studied on a video monitor to ensure the actors' eyelines were correct.

Two full body suits were built. “They were made of spandex and padded with polyfoam. Babies have shorter legs and shorter necks than adults do. Also, their hands are bigger in relation to their bodies, and their crotches are lower. The only things we couldn’t change on Alex were his knee joints — his knees in the suit were higher than they would have been on a real baby — but everything else proportioned out quite well.” The most difficult baby feature to duplicate was the skin. “A baby’s skin is very soft and supple and translucent. We looked into skinflex and some other materials, but they were all heavy and would have made the suit very uncomfortable for Alex. So we ended up going with standard foam latex. We had to give up some translucency, but the suit was light and it moved well.” Because the baby was fully clothed throughout the film, only the skin on his arms and face was visible in the suit. “We made a baby glove that went to about mid-forearm. It was a spandex-reinforced glove with foam skin on the outside which we painted a realistic skin tone. We made twenty-four sets of the gloves because they got dirty real fast.”

Exposed to another electromagnetic field while watching television, Adam escapes both the playpen and the house. Now fourteen feet tall, the baby explores the neighborhood, literally crashing a backyard birthday party.

Three fully mechanized heads were also constructed. “We built a complete, self-contained mask that was operated by radio controlled servo motors,” said Yagher. “The mechanisms for the head mask were fit inside a fiberglass shell. We made a special skullcap to formfit on Alex’s head — it was a thin black fiberglass cap that went around his eyes. That was incorporated into the mask so it would fit over his head and was bolted inside the fiberglass shell that held the foam skin to the right shape. Our motors were attached to the fiberglass all around the inside of the head. The only problem was the weight. We took out huge holes in the fiberglass for ventilation and to keep the weight down. We also tried to get the lightest servos we could. But it was still heavy enough on his head that after wearing it a while he would have to take a break.” The completed head was mechanized for inside and outside brow movement, as well as smiling and frowning. “I put inner bladders in the face and cheeks so that when he smiled, the cheeks would fill up and look natural. It also had full eye movement — eyelids and eyeball rotation — and full lip movement so he could talk if necessary. Four puppeteers were required to operate all of the head mechanisms. Even though it was supposed to be seen mainly from the back, we put all these things in, just in case. And as it turned out there was a shot in the film where they held on the face a long time. It is when Adam is sleeping in the little cage they built for him in the house and the brother is sleeping next to him. The baby stirs a little bit, and that is Alex in our suit. You see the face again when he is in the background batting the balls with the paddle. Those are really the only times you see the face.”

Yagher’s team was also responsible for building three twenty-one-inch, cable-controlled puppets — representing Nick, Wayne and Diane — that were used for fleeting shots of the oversize toddler interacting with a family member. “They were made with full-cabled arms and they

swiveled from the hips," Yagher explained. "They also had shoulder rotation and upper arm rotation, elbow and wrist movement and head movement." The puppets were used most extensively in the Szalinski house. "In the scene where they are fighting over the bedroom door that Adam has taken off the hinges, there was a lot of intercutting with the puppet and the baby suit. When the camera was on Rick Moranis, we'd shoot over the baby-suit shoulder; then, when the camera was on the baby, we'd shoot over the shoulder of a Rick Moranis puppet toward the real baby. My favorite shot of the puppets is when they are at the lab and Rick Moranis is stalling his boss, telling him the baby is an uncle from Yugoslavia, while the baby is behind the lab door with Nick. There are three separate takes where they cut to the door, and it is our Nick puppet looking through and holding back the baby. During one take Joshua reached over and grabbed the glasses right off of the Nick puppet — just pulled them off and broke them. And then he turned to camera and said, 'Hey, look!' And we're all thinking, 'Well, there goes a week's work…'"

Although Yagher would have preferred more time to perfect the baby suit, he is proud of the contribution his work made to the film. "It was one of the most difficult things I've ever done. Instead of creating a character, we were trying to duplicate human life — which was very challenging. Over fifty cuts of our baby suit made it into the film. But, ultimately, if we did our job well, nobody will be able to discern it from the real baby."

Intercepted by the 'suits' at Sterling Labs, Wayne fails to gain access to the cannon that would allow him to return Adam to normal size. A scene between Nick and Wayne as they drive home in the van — with the seven-foot baby in the back seat — was accomplished as a four-element composite. One element consisted of the real baby sitting in a miniature van interior built by Stetson Visual Services. The modelmaking company — founded by Mark Stetson and Robert Spurlock — constructed a variety of miniatures for the film, from desert landscapes to model helicopters. One of the most challenging features of the project, from a modelmaking point of view, was that the baby's scale changed from one sequence to the next. "For every model that we made," said Stetson, "we had to identify the scale it was supposed to be built to, the size of the baby in the scene, the scale of the baby in the scene, and the scale of the environment that the model was in. And then, of course, we had to consider whether it was going to be shot motion control or high speed, in daylight or at night. It was very complicated."

Stetson and chief modelmaker Henry Gonzales supervised construction of the forty-three-percent miniature van interior. "We essentially had to build a restraining cage in the miniature for the child to sit in," said Stetson, "because they were going to mount the van interior on the end of a flatbed truck and actually drive it around with the kid inside of it. Henry and I are both fathers of young children, so we were kind of paranoid about that. I would bring my own kid in to check it out." As a safety precaution, the van miniature was equipped with extra seat belts and a roll cage to protect the child in case of a mishap.

The multi-element composite also included footage of Oliveri and Moranis in the front of the van, and the passing landscape reflected in the windshield. "Our fourth element," said Smith, "the one farthest back, was the receding scenery outside. We placed the windshield in front, as if we were shooting through it, and then we had a double-exposed element of scenery passing over the windshield and the front of the van."

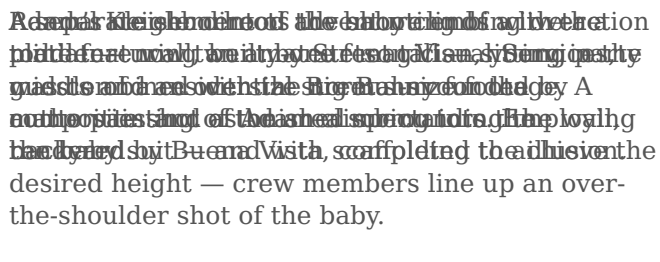
Unable to access the cannon at the lab, Wayne and Diane go in search of Wayne's original shrinking gun, now stored in a Sterling Laboratories warehouse. Left alone to babysit, Nick keeps watch on Adam as he sleeps within a giant makeshift playpen. At last, all is quiet in the Szalinski household — until, suddenly, the doorbell rings and we realize that, in the commotion, no one has remembered to cancel the babysitter due to arrive that afternoon. To make matters worse, the babysitter, Mandy (Keri Russell) is the very girl Nick has been mooning over at the water park where he works. As a love- and panic-stricken Nick attempts to send Mandy away, Adam appears, throwing open the door and revealing his full seven-foot frame. In part because the plate of Nick and Mandy at the door had been shot in bright daylight, the bluescreen composite was one of the most problematic of the show. In fact, it was attempted by more than one facility before a satisfactory shot was achieved.

Among those who took a crack at the babysitter-at-the-door shot were the compositing teams at Sony High Definition Facilities and CIS-Hollywood — two companies which, until this film, worked almost exclusively in a resolution thought to be too low for feature films. "The really newsbreaking thing on this film," Smith commented, "was our use of electronic compositing. Sony and CIS did the most interesting things in terms of visual effects. Everything else we did in the movie was a matter of designing the shots properly and executing them well — there was very little technology that was different. But Honey, I Blew Up the Kid was the first feature film to use some of the new technology that is available in video postproduction and, even as we were working on it, the word spread in the underground of visual effects."

The primary advantage to working in the video realm is the speed and ease with which composites can be completed. "Imagine a postproduction video facility," Smith enthused, "where you are sitting in front of a monitor. You have two, three or four elements and Pop! Pop! Pop! — they come up on the screen and you can reposition them any way you want them. Then you see them all composited and you run the shot and decide you'd like to make one part a little smaller or greener or whatever. And you see those changes taking place as you are sitting there. When you are finally happy with it, they run the shot and you go on. In twenty or thirty minutes, with the director sitting right there, you can composite the image. That is what every director dreams of. Up to now, we haven't had that in visual effects because the quality that video gave us wasn't good enough for movies. But we are getting to a point where we can get the quality of film with the real-time capability of video."

Early in the Honey project, Smith had explored the possibility of employing electronic compositing; and, in fact, Disney had made a contractual agreement with Sony for the development of the technology in future projects. At the time, however, Sony's results were still not up to film standards. Nearly a year later — and well into the Honey production schedule — Sony was given another opportunity to show what they could do. "They said they had new equipment that was working out very well," said Smith, "so we gave it

a try — and we were surprised by the quality. Not everything they did worked as well as what we could have done optically, so it was not as if we were ready to throw out the optical printers; but there were a fair number of shots that could be done quicker and with as good a quality as an optical shot — sometimes better, because they can do wonderful matting." Ultimately, eleven of Sony's composites made their way into the finished film.



desired height — crew members line up an over-the-shoulder shot of the baby.

Interestingly, CIS was originally contracted to provide only temporary composites. "When we went into previews," Michael Muscal recalled, "everyone was very nervous about the black-and-white temps and whether or not they would confuse the audience or bring the movie down. So we asked CIS to put together some rough color temps for the previews. We told them we just wanted them to knock off about ten of these things, and not to try to make them perfect. Of course, they went in and tried to make them perfect. One of them looked so good, we decided to go with it as the final composite. It was a shot in downtown Las Vegas. We put it together at CIS in fifteen minutes, and it is in the movie!"

Encouraged by CIS's results — and the fact that they were making upgrades in their equipment — Smith and Muscal commissioned the company to produce a number of additional final comps. "At that point," stated CIS vice president Godfrey Pye, "they were ready for us to use a bit more of their money and spend a bit more of our time doing the composites properly. They asked us, 'Can you do matting?' And we're thinking, 'Mr. Bojangles, can you dance?' I mean, that's what we do for a living!" Among the additional half dozen shots were several that had been previously attempted in optical or at Sony — including the infamous babysitter-at-the-door shot. "It was almost a dare. 'These guys think they're so smart, let's give them the door shot.' 'Ha-ha-ha — not the door shot!' Everybody had had a try at that one, but ours is the one that wound up in the film."

For all involved, Honey, I Blew Up the Kid was a significant leap in breaking down the barriers between video and feature film effects. "We have seen our commercial clients learn the interactive aspect of this work," CIS compositer Price Pethel observed, "but the feature people are not yet used to it. This was a new perspective for them; and I think it was a bit in front of their expectations. So there is now a transition taking place. We want feature film people to get into this approach, not just because it is faster and cheaper, but because it is better. We think it will change the way movies are made."

"A year ago," Pye concluded, "we were strategizing how we could get into the feature film market. And now we're in the position of trying to figure out how we are going to handle all the feature film business currently coming our way — especially when our big resolution leap happens early in '93. There may very well come a time when optical is no longer in great demand. I'm from London and my experience there was that all the optical effects houses died. There are about two left — there just wasn't enough work to sustain any more than that. If the same thing happens here, because of guys like us, a lot of the work will be gone."

Amidst thousands of crates at the Sterling warehouse, Wayne and Diane somehow manage to find Wayne's original shrinking gun. Speeding away with the device in the rear, the solar van is pursued by two motorcycle cops until Wayne — attempting to make repairs on the cannon — accidentally hits the tailing cops with a shrinking beam, reducing them to tiny specks in the road. Available Light provided the cannon blast, as well as the shrinking effect. "It is a POV from behind the van," John Van Vliet explained. "On location, they had the cops following behind the van on motorcycles; and at a particular signal, they just peeled off and passed — which left us with an empty road, from the same POV. They shot all of that in four-perf. Then we went back in and essentially jump-cut the cops out, and put the beams coming in. We took the four-perf image of them on the road and shrank them down in about twelve frames. We used the pinblock method — we had the frames under the camera and did a massive pull-back. We put them on the animation stand, blew them up real big and hand-rotoed them, then matted them into the background." Realizing his error, Wayne directs another beam at the cops, who are immediately restored to full size. "We repeated our process, only in reverse, to blow them back up, just pinblocking that expansion in. Disney was delighted with the approach because the cost of doing it this way was spare change for them. We did it simple, we did it fast — and it worked."

The shrinking cannon itself was the same one used in the original film, and was modified for the sequel by Peter Chesney's Image Engineering, the company that had built it. Giant baby shoes and overalls were among the other props Chesney would construct for Honey, I Blew Up the Kid. In addition, Chesney built the enlarging cannon featured in the lab sequences. "We carried through the same logic for the enlarging cannon as we had for the shrinking cannon," Chesney noted. "One of the similarities, for us, between this film and the first film was that there was a Wayne Szalinski kind of logic that had to be followed through everything." Similar consideration had to be accorded all of the oddball Szalinski inventions, most of which were constructed by Rick Gamez of Rick's Custom Props. These included the Rube Goldberg-esque Szalinski mailbox, the inventor's multipurpose helmet, and all of the various gadgets featured in the Szalinski kitchen. Once designed and constructed, Chesney's team took over the maintenance and operation of the gadgets during production.

Although reminiscent of Wayne's original shrinking cannon, the enlarging cannon featured in the lab sequences was designed and built on a much grander scale. "The original cannon was only about five feet long," Chesney said, "but the new cannon was over sixteen feet long. It was built on a rolling gantry and it had a fair amount of action capability. We started by building a mechanical frame that would allow it to pivot, rotate and tilt. Then we chose materials, getting approval from Les Dilley as we went along. We went for real stainless tubing, and we did a lot of vacuforming to give it a NASA look." Reactive

Putting the twenty-one-foot baby in the street required one of several live-action motion control setups realized by The Chandler Group. Laying track on the location street, Chandler effected a

lights were incorporated into the cannon, primarily to act as reference for lighting effects that would be added in postproduction. “It had projector lamps in it and other lighting effects. Also, the cryogenics of the cannon were part of its design motif — there is a braided stainless steel hose that was both decorative and functional. It carried the liquid nitrogen that was pumped through the gun at the start of every shot. We got stainless steel liquid nitrogen tanks that stood about six feet tall and parked them right on the set. Normally we would hide them off camera, but they looked appropriate for the lab. We hid a lot of copper pipe in the sides to help the flow of liquid nitrogen we pumped into it. Like the original gun, we had to chill it before every take so it would have a frosted look.”

For scale reference, a giant cutout of the baby was placed in the street during the trial runs for the live-action plate. Randal Kleiser confers with Robert Oliveri and actress Kerri Russell.

thirty-two-foot tracking move which followed the crowd as the camera dollied toward the area where the baby would subsequently be matted in. The move was later repeated on the baby during the postproduction bluescreen shoot. Because it contained the giant baby against a bright daytime sky, the street composite was one of the most difficult of the show.

With the original shrinking cannon in hand, Wayne and Diane return home only to discover that Adam has escaped from the house. Worse, he is now fourteen feet tall due to exposure to the electromagnetic field from the television set. While exploring the neighborhood from his new perspective, Adam attempts to crash a neighborhood birthday party by climbing over a wall and into an adjoining yard. To achieve the shot, the baby climbing over a one-quarter-scale wall built by Stetson Visual Services was combined with a full-scale live-action plate of the birthday party’s amateur magician by means of a split and matte painting join realized by BVVE. The scene also included a closer bluescreen shot composited by Sony.

When next seen, Adam is sitting in a neighborhood street, surrounded by police and astounded onlookers. Having been exposed to power lines, the toddler — now twenty-one feet tall. The daytime shot of Adam in the street was one of the most difficult motion control shots in the film. “It was the shot we had the most trouble with,” Tom Smith recalled. “It was one of the few places where we saw Adam against a bright sky — and daytime visual effects are always a real problem.”

Chandler had taken their live-action motion control setup out on location in Simi Valley to shoot the residential street. “That shot posed a lot of difficult challenges,” noted John Scheele. “Randal wanted to keep the camera tracking as it panned and tilted — it was a thirty-two-foot-long tracking move that followed the crowd and moved in on the baby. That meant that it could never be a nodal shot, even though we could repeat the ‘shape’ of the camera move. We had our track laid out on the street, and production made a giant cutout of the baby that we shot for scale reference. Later, we could use this to check the size of the bluescreened baby, and to correct the inevitable ‘sliding’ that occurred from the use of the track.”

When it came time to shoot the motion control bluescreen element of the toddler, Chandler first shot video tests. “There really wasn’t any kind of exact calculation we could do to make sure it would work,” noted Baker, “so we needed a video assist to finally confirm it. We would double-expose the bluescreen baby over the background plate to see how they related to each other. Apogee, which was nearby, was kind enough to let the production use their screening facilities, also their black-and-white developer and their Vistavision Moviola which has a pin-registered movement built into the viewer. Once we had performed these video tests, we could look for any

discrepancy in the tracking movement. We got it as close as we could with the clock running on us, and then shot the plate. We perfected the tracking axis on the optical printer later. In a lot of the opticals there was fudging, making the baby fifteen percent larger or reducing the background ten percent. No matter how careful we were in the correct scaling of it, there was always some massaging at the end to make it look better."

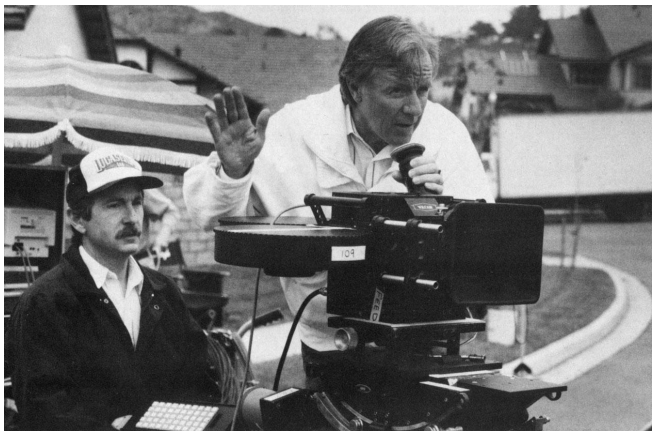
Against Wayne and Diane's protests, their freakish infant is taken into custody and loaded into a truck. He soon escapes, however, when the truck passes beneath power lines and the baby grows to a whopping fifty-six feet tall. Our introduction to the fifty-six-foot-tall Adam is a shot of giant baby Adidas shoes and two huge baby hands as they come into frame to scoop up Nick and Mandy. While the baby hand was bluescreened into the shot, the giant shoes were the handiwork of Peter Chesney. Chesney's team, led by David Sosalla, actually built the giant baby shoes in two sizes — eight-foot versions to represent Adam at fifty-six feet and seventeen-foot versions for shots of the toddler at one hundred twelve feet.

Construction of the shoes began with plywood framing that was bolted together, then filled in with rigid styrofoam. "We went with a glue and muslin surface coat," Chesney explained. "The final surface dimensions were built up with soft foam bulkheads and overlays, and then we went to a skin treatment with textured vinyls. Basically it was constructed exactly like you would construct a real shoe, with particular sections machined out and then sewn together. In some instances, we had to seam the material together because it didn't come in big enough sections. We would blend those seams with soldering guns, melting the material together. Then we punched all the holes into the vinyl and made vacuform eyelets, and used half-inch-thick rope for the thread in the shoe stitching. We even had to weave our own shoelaces — hundreds of feet of it. We didn't have to worry about duplicating the inside of the shoe, since the pants leg came down over it, but we did have to build the shoe all the way to the top, just in case the pants leg moved up when the shoes were moved." One of the most difficult aspects of the project was dealing with the enormous size. "The shoes were twenty feet tall and weighed fifteen hundred pounds. They were so big that each shoe took up a tractor trailer. In fact, we had to use a giant shoehorn to fit them into the truck — the foam had enlarged a bit by the time we shipped them, so we had to push and shove to get them in there. And we had to use cranes to lift them into and out of the trucks." Chesney had originally been directed to make the shoes as stationary props, without any mechanical capabilities. However, past experience suggested that once on set, the filmmakers might require some movement. "We put in hinges and cable so they could make a half-step movement. There was a lever inside the shoe that would make the toe come up — a crew member would actually climb down into the shoe and operate the lever from inside. There was also a rigid plywood calf that came up to about twenty feet which was attached at an ankle hinge and a toe hinge. We had a twenty-ton crane that could pick up the leg and swing it thirty or forty feet."

Similar to the giant shoes were the baby chest sections, also built in two scales — the larger one measuring twenty-four feet by thirty-two feet, and the smaller one measuring sixteen-by-twelve. Draped with giant-size overalls, they were utilized primarily for shots of Nick and Mandy inside the pocket where Adam has placed them. "We created everything from the neck down to the belly button," said Chesney. "The smaller version had both arms, but we decided

we could save money if we built only one arm for the larger one — both arms were never in any of those shots, anyway. Most of the shots with the big chest were on or inside the pocket. We built the pocket with an opening at the side so that the camera could get in, if necessary." Like the shoes, the giant overalls were framed in plywood, then filled in with block foam. "The styrofoam was hand-carved into shape, then coated with muslin and fiberglass."

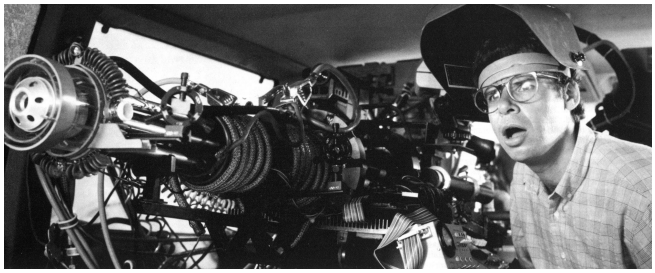
The overalls had to duplicate the corduroy rompers worn by Adam throughout the film. "All the fabrics had to be chosen for scale," Chesney explained. "We looked at the original materials under microscopes and found that the fabrics didn't really look like what you think they should look like. So we strived for what people would expect the materials to look like when blown up to that size, not necessarily what they would really look like. The buckles on the overalls were made out of vacumetalized plexiglass and styrenes. The corduroy had a type of muslin backing, a fiberfill liner and a funneled fur surface. Everything had to be dyed to match, which was a huge job. It had to go through an industrial machine just to make the three-inch-wide whale in the corduroy itself. We contracted some industrial manufacturers that could sew it in five- or six-foot-wide panels; then our seamstresses sewed everything together." Because of the massive size of the chest props, seamstresses were given mountain climbing instruction so that they could scale the construct to complete the hand sewing and detailing. "We had to put them in harnesses and teach them how to rappel and everything. We'd work with block and tackle, moving them up and down on it. They also worked with rope ascenders so they could get around themselves. Essentially, they were sewing twenty-five feet up a vertical cliff."



On location, production designer Leslie Dilley, who also served as second unit director, sets up a scene while director of visual effects photography John Fante programs a motion control camera move.

Specific shots of Adam's chest in motion required that the large-scale prop simulate the walking movement of a two-year-old. Chesney videotaped his two-year-old nephew to study the movement pattern of the toddler's chest. "We did a bunch of videotape of him walking, while photographing just his chest area," Chesney recalled. "We studied a fixed point on his chest and discovered that as he walked, it made sort of a figure eight pattern." In trying to mechanically duplicate the figure-eight movement with the chest pieces, Chesney was handicapped both by a limited budget and the weight and size of the objects. "We finally worked out a rubber band approach. We mounted the chest on a stage at Disney, suspending it from a truss system. The whole structure was off the floor by about three or four feet. We suspended it using very large bungee cords, so it had some bounce to it. One of the tricky things about it was that we had to suspend it off its center of gravity to keep the cables out of frame. We set up a cantilevered structure using eighty feet of lightweight truss at four gimbal points coming back to a ground anchor that was about twelve feet off the ground — so the whole thing would 'float' top to bottom and left to right. There was a system of ropes manned by eight men who would tug at the ropes to produce the figure-eight movement."

Among the key effects personnel were Buena Vista Visual Effects supervisor Harrison Ellenshaw and visual effects producer Carolyn Soper. Although a number of companies contributed to the show, Buena Vista was responsible for nearly half of the film's effects shots.



Desperate to return their child to his proper size, Wayne and wife Diane break into a Sterling Laboratories warehouse and abscond with the original shrinking cannon. The practical prop, which had been built for the first film by mechanical effects coordinator Peter Chesney and his Image Engineering company, was retrieved from storage at Walt Disney World and retooled for the sequel.

From their vantage point inside the overall pocket, Nick and Mandy watch as Adam walks across the desert toward the bright lights of Las Vegas. Shots of the teenagers inside the pocket were achieved in three ways — full-size shots of the actors inside Chesney's giant chest piece; shots of the actors pinblocked into bluescreened baby shots; and, for longer shots, three-inch radio control Nick and Mandy puppets inside the real baby's pocket. Kevin Yagher created the tiny figures. "They had built two little rubber dolls that they stuck in the pocket for when the baby ran by really quickly," Yagher revealed, "but they wanted some movement to the characters for other shots. So we made these radio controlled puppets that had head rotation and bodies that swiveled around. Also, one arm on each puppet could move, while another arm held onto the lip of the

pocket. The motors for the puppets were hidden inside the pocket itself. The worst part was making Mandy's hair, which was very long and curly. I had to curl all the hair on straight pins, six strands at a time. It was horribly painstaking."

Understandably, the Shalikar twins were fascinated with the little moving dolls. "They were very expensive and very delicate," noted Tom Smith, "and we were afraid the babies would tear them apart. So we tried to persuade both the boys that this was a baby Nick and this was a baby Mandy so they wouldn't hurt them — and I think they really believed they were little tiny people. One time we were getting ready to do a shot with the puppets, and the puppeteers who were operating the radio control were all set to go, and we were running, and I said: 'Action! Come on out, Joshua.' And he didn't come out. So I kept saying, 'Come on out,' and still nothing happened. Finally, I got on the radio and said: 'What's going on back there? Why isn't he coming out?' And someone said, 'I don't know — he says that Mandy is sick.' It turned out that a hand had broken on the Mandy puppet and Joshua didn't want to walk out with it."

Realizing that Adam is headed for Las Vegas — possibly the biggest source of electromagnetic flux in the world — the authorities set up a roadblock in the desert in an ineffectual attempt to stop the fifty-six-foot toddler. Shots of Adam's desert approach toward the city were achieved by filming the baby live-action on miniature sets built by Stetson Visual Services. "Our largest set was a sixteenth-scale desert landscape with an overpass," said Stetson. "It was about forty by sixty feet and it involved mostly landscape work, a roadway, and a sixteenth-scale camper on the overpass that was servo-driven and shot high speed. We also built a lot of set dressing on that, such as billboards and fences and derelict cars."

"The set was made out of styrofoam for the rocks," Henry Gonzales elaborated, "and lots of sand and plaster. It was foamcore sheeting, and we built up the general contours of the landscape and detailed from there. We used very fine grain sand — sifted silica — and tinted it with mortar tints, blending the colors with a cement mixer."

Stetson also built a smaller, forced-perspective crossroads miniature, as well as a variety of model vehicles to pass by as the baby made his way across the desert. "The trucks all had to be shot high speed," Stetson remarked, "so they had very bright lights on them for the headlights and marker lights, and they moved around through the scenes very quickly. They had to run smoothly so they wouldn't look like bouncing toys, so we ran them all on rails set below the surface of the set. We ran tabs in between the wheels, through slots in the pavement. To make the motion very smooth, we made the highway out of rubber so it would absorb any irregularities or bumps. We had special profiles for the drivers of each of the vehicles — Donald Duck, Elvis and a Nazi SS officer in full uniform. We also had — known only to ourselves — a hazardous waste theme going all through the show. So all of these trucks going through the desert in the middle of the night were illegal chemical dumping trucks. It was stuff that would never be exposed on film; but we put it in anyway, just for fun."

As the baby walks down the desert road toward Las Vegas, he stops to pull a road sign out of the ground, throwing it forcefully across the miniature landscape. The road sign shot had multiple elements — including bluescreened onlookers in the foreground and animated sparks — and was composited by Sony. "That particular scene had four elements to it," said Sony High

Definition Facilities chairman Bill Connolly. “There was the baby walking down the forced perspective set; the black sky, which we added stars to; animated sparks; and, finally, the people in the foreground. The sparks that flash when the child drops the sign were in the original plate, but they didn’t quite fit the action. So we took the sparks that were generated on the film and recreated that same pattern in the computer, but made it happen in exact sync with the child dropping the sign. Then, to make it more realistic, the light from those sparks had to flash back on the baby. So we had to go back in and add the light hitting the child. Also, the people who were in the foreground plate had to have those same sparks reflecting on them. In the Digital Domain, we could easily alter the sparks and have them reflect back on the plate with the baby, or forward on the plate with the foreground people.”

On the run with the shrinking cannon, Wayne and Diane are tailed by two motorcycle cops. While attempting to repair the cannon in the back of his solar van, Wayne inadvertently directs a shrinking beam at their pursuers. The baffled policemen are abruptly reduced to tiny specks in the road, then instantly restored to full size when Wayne realizes what he has done and corrects his mistake with a second burst from the cannon. Available Light achieved the shrinking effect by isolating the officers from their background via rotoscoping and then pinblocking them a frame at a time to reduce their image sizes. Available Light also rendered the shrinking ray beam and a residual electrical effect on the cops as their full size is restored.

The seemingly unstoppable child is temporarily distracted when Big Bunny — now a really, really big bunny — is flown in by helicopter. Several elements went into the shots of the helicopter flying above the desert with the giant stuffed rabbit in tow, including aerial plates shot above Las Vegas by Tom Smith and John Fante, and a model helicopter shot motion control by Perpetual Motion Pictures. Stetson Visual Services provided all of the model helicopters featured in the film. “We built three helicopters all together,” Stetson recalled. “One was a Huey in one-thirty-second scale that had rotating rotors and functional lights. That one was just built from a hobby kit, but we did have to add drives to it and detail it like the one the main unit had shot full-size. It was battery-powered and driven from within the model, so it was quite difficult getting all those mechanisms to fit inside. That model was used for a scene where Marcia Strassman has been blown up to Adam’s scale and she picks the helicopter out of the sky and places it on the ground. We also built two helicopters in one-seventh scale — one that was used in the Big Bunny scene, and another one that had the bad guys in it with their dart guns. Larry Jolly, Jim Jolly and Ken Wyans built the larger-scale helicopters for us. Larry generated the basic form from molds of radio-controlled helicopter shells that he had. Those had working blades and lights. All of these helicopters had servo-operated puppets inside that could do hand motions and also head movements. For the one-seventh-scale helicopters, Mike Hosch sculpted some seventh-scale figures of the pilot and passengers — they also had basic movements that were operated by motion control.”

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Perpetual Motion Pictures, which had realized the motion controlled flight of the bee in the original Honey, shot the Big Bunny helicopter sequence. “We had worked with Tom Smith and Mike Muscal on Honey, I Shrunk the Kids,” PMP executive producer Chuck Finance related, “and fortunately they thought enough of our work on that film to trust us with some shots for this one. This picture really involved much greater depth than the first one had, for us. We had a lot more to deal with — shooting the elements in some cases, deciding how they would be put together, basically creating the shots. For the Big Bunny helicopter sequence, Disney supplied the background aerial plates and the miniature helicopter and Big Bunny, and we did the motion control shoot for it and the optical compositing.”

Richard Malzahn, effects supervisor for the facility, was in charge of the motion control shoot. “We thought that it might be a problem trying to maintain the exposure on the spinning rotor with the helicopter, which was a solid blob,” Malzahn said. “So we opted to shoot the rotor, the

helicopter and a light pass all separately.” One of the difficulties encountered was that, to match the live-action helicopter chosen by the production, the miniature had been detailed with a wide blue stripe along its length. “That blue stripe was not ideal for bluescreen,” noted optical supervisor Robert Habros, “so we had to find ways to work around that. Sometimes we shot the model frontlight/ backlight. Other times we would try to extract a matte off of a brightly exposed, flatly frontlit helicopter, and it would almost look like it was all white.”

Perpetual Motion also shot Big Bunny, both attached to the helicopter and alone. “Sometimes we shot them separately just because of the nature of the shot,” Malzahn explained. “There were cases where we wanted to shoot the rabbit bluescreen, but we couldn’t shoot the helicopter bluescreen because of the problems with the blue stripe. So we would set up a rig that would hold the helicopter. Then we would pull the helicopter off and put the bunny on the same rig and repeat the move. So in one pass, we would shoot the helicopter against black; then on the next one, we would shoot the rabbit against blue.” One of the challenges was giving the bunny a sense of scale and dynamics as it moved through the sky. “The rabbit they gave us was about five feet tall — but the size didn’t necessarily give it a sense of scale, because in motion control, every move it makes you have to tell it to make. Nothing happens naturally when you’re shooting at one frame a second. In reality, an object that size could never be lifted by that particular helicopter — it would be too big and too heavy. But we were given that helicopter and that rabbit and were told to make them fly and do it believably. So it was a concern to make the rabbit look heavy and make the helicopter look like it was struggling to keep it up.”

At one point in the scene, Adam takes a playful swat at the bunny, causing the helicopter to lose control as the giant stuffed animal swings wildly across the sky. The infant was shot live-action, standing on Stetson’s desert miniature, while a crew member swung the bunny attached to straps from a wire. “They shot all the elements for it except for the helicopter,” noted Malzahn. “Even the strap that hangs down from the helicopter was in the live-action plate. So I just tracked that strap in my shot, lining the helicopter up to it. At one point we shot a test with full-size straps. We had a rig that held the camera underneath the straps, to photograph the movement as they swung. But we found that with the camera actually on the straps you could hardly detect any movement at all. We were swinging the straps, radically, but it just didn’t read. So we decided that in order to get a high-impact visual we had to take the camera off of the bunny — that way, the helicopter could swing and the straps could swing through frame, and it was as if the camera was between the bunny and the helicopter. We had to stiffen the straps with glue to make them look like they were holding something, and the cables coming down were made out of threaded rod; so everything was stiff.”

PMP also produced optical composites for the shots. “Adam had been shot against black on the tabletop miniature,” commented Habros. “They had shot him on one miniature that represented a farther distance, then they shot another foreground miniature — and we had to combine those two elements. In addition, we had some midground people with emergency vehicles that had to be matted in, as well as the miniature helicopter that Richard had shot. We also sweetened the shot with some blinking red lights and stars. The people on the ground had to appear quite

small at Adam's feet, and yet the bluescreen elements of these people had been full frame. So we had to do some radical reductions to shrink them down."

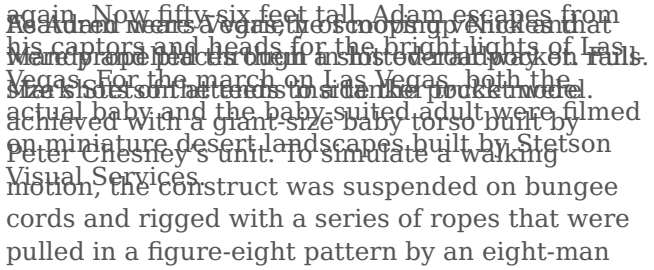
A later scene of the bunny dropping from the helicopter was achieved by intercutting live-action shots of a full-size falling Big Bunny head with motion control shots of the bunny model. The full-size head had also facilitated live-action shots of Rick Moranis riding atop the bunny, singing Adam's favorite lullaby into a loudspeaker in an attempt to lull the child to sleep. After Adam swats the bunny, Wayne clings desperately to the stuffed toy and finally jumps from the head to Adam's chest. Rick Moranis performed the first part of the stunt himself. "We had the bunny head swinging through a pendulum arc that was probably a fifty-foot swing," recalled Peter Chesney, "and Rick wanted to do the leap off of it. We put him on flying wires and he leaped off the bunny and just sailed out into clear space. Then a stuntman actually did the part where he impacts onto our big chest piece. Rick has done a fair amount of flying wire work in the past, so he was remarkably comfortable with it. But it was a big deal — to be up there on that swinging head, with lights in his face in an all black environment, a good twenty feet off the ground." A subsequent shot shows Wayne sliding down inside Adam's overalls and finally dropping out the bottom of the pants leg. Both the giant chest piece and shoes were used for the stunt. "One of our crew members, Sandy Stewart, was the right size for it. She was on a rappelling mountaineering harness and she came down from the top until she got to the point where Rick Moranis was. Rick was hanging on a trapeze bar and he then dropped the last eight feet to the ground."

Now a full one-hundred-twelve feet tall, Adam finally arrives in downtown Las Vegas for a long sequence that required numerous live-action background plates with hundreds of onlookers running wildly in all directions. "When I first read the script for this film," said Tom Smith, "I thought we'd be spending a lot of money building a miniature Las Vegas for the baby to walk in. But, as it turned out, we didn't build any miniatures at all for that sequence. For all of the Vegas shots, the baby was shot against bluescreen, with mirrorplex on the floor to give us blue all around. Then he was composited into plates that we shot on the Vegas streets. We shot for about six weeks on the streets of Vegas; and we had, at times, more than one hundred extras. It was important to have people in the shots. If we had just had a big baby in the street alone, people would assume he was standing in a miniature." To guide the extras' eyelines as they supposedly gawked at the giant baby, Peter Chesney rigged tiny blimps at the correct height during the Las Vegas shoot.

The Vegas sequence featured the majority of the film's bluescreen composites, most of which were realized by Buena Vista. The first shot reveals Adam walking up the street towards camera. This initial shot was one of the most complicated composites achieved by the company. "It was a monster," Ellenshaw affirmed. "Very early in preproduction, we had done a test of this shot for Jeremiah Chechik and it had been very successful — in fact, it was one of the tests that convinced

Wayne and Diane return home with the shrinking cannon, only to find that Adam has been taken into custody by the authorities. While the baby is being transported to a research facility for study, overhead power lines cause the child to grow once

everyone that the concept of a hundred-twelve-foot baby could even work. But when it came time to use that same shot in the film, the baby looked too young, so we had to reshoot him. Then they kept adding things to it. At one point the head of the studio, Jeffrey Katzenberg said, ‘You know, it would be nice if you saw foreground people running even closer to camera.’ So even after we thought we had it done, we had to go back and add people. There were a lot of added elements in that shot, from lights in the windows to people on the street.”



Reunited with a gigantic prosthetic version of
himself, Adam escapes from his captors and heads
for the bright lights of Las Vegas. For the march on
Las Vegas, both the actual baby and the baby-suited
adult were filmed on miniature desert landscapes
built by Stetson Visual Services.
Mark Stetson attends to the baby puppet's
achieved with a giant-size baby torso built by
Peter Chesney's unit. To simulate a walking
motion, the construct was suspended on bungee
cords and rigged with a series of ropes that were
pulled in a figure-eight pattern by an eight-man
team.

Adam makes his first appearance in Vegas as he steps around the corner of a brightly lit hotel. During the bluescreen shoot, an unsteady flat stood in for the building. “It was supposed to look as though his hand was on a hard edge,” Carolyn Soper commented, “but the flat shook as he placed his hand on it, so we had to do a difficult roto on that. His hands were very small in frame and we had to put a shadow from the hand on the building to hide the fact that Adam was holding onto something that had some movement to it.”

The second shot in the sequence was a down-angle revealing the child’s feet as he strides through the crowd. For the shot, Chandler set up their motion control rig on the Las Vegas street. “In that particular scene,” Don Baker noted, “there was quite a bit of forced fitting to get the baby to appear to walk down the center of the street. Also later, with the first composites, there was still a little bit of slippage there, particularly when the baby’s feet were static. So we had to further adjust the baby’s position relative to the background through motion control optical printing. The shot also required a hand roto of a hotel sign that was in the foreground. And it was one of those tricky situations where there was a black silhouette sign against a black pavement, so there were no clearly defined edges to articulate.” Chandler was able to make use of the baby’s reflection on the mirrorplex to help tie the bluescreen element into the background plate. “The mirrorplex not only reflects the bluescreen,” said Scheele, “it inevitably reflects the baby, too. In this case, since the baby was supposedly backlit by the lights coming off the casino behind him, it justified turning the reflection into a shadow. So we did some rotoscoping to isolate the reflection and turned it into a faint cast shadow. We were able to turn what would ordinarily have been a problem into an asset.”

Another motion control setup was required for a shot of Adam tripping on a shoelace and falling forward onto the street. The Chandler Group had done a test of the shot, shooting a bluescreen element of the baby falling. Despite technical problems, the child’s performance in the test shot was so good that Tom Smith opted to use it as the final bluescreen element. “The test shots were good,” Scheele noted, “but we were going through the shots quickly and the plate where the baby falls down was a little soft-focus. Also, the camera on the test was set up in a position so that the lens was right at surface level. It gave us a very dramatic angle on the baby’s fall, but it was an impossible camera position to match when we went on location. To get as close as possible, we lowered the camera head into a manhole to get the lens near to pavement level. Tom also came up with the idea of having the baby strike a police barricade as he falls down, so

your eye is further distracted by the barricade flying through frame." The shot was also worrisome because the baby appeared considerably younger than he did in the shots immediately prior to and after his fall. "That test day had been very early on and the baby's hair was now much fuller and curlier than it had been then. So all of these things were stacked against the shot; but because it was a quick cut, we were able to get by with it."

While Adam is sprawled on hands and knees on the street, Nick and Mandy seize an opportunity to escape from the pocket by lowering themselves on a loose thread. As they climb down, a Lotus sports car careens around a corner, screeches through Adam's spread arms and comes to a stop beneath the infant's body. Nick and Mandy lower themselves into the car, but are soon airborne once again when Adam picks up the Lotus and plays with it as if it were a toy airplane. The 'car flight' sequence was a long series of shots requiring rear projection and a special car mount designed and rigged by Image Engineering.

Buena Vista effected the shot of Nick and Mandy lowering themselves from the pocket, pinblocking the tiny figures of the actors into the scene. Pinblock capabilities were a fairly recent addition to the company's effects repertoire. "As part of our efforts to upgrade BVVE's capabilities," said Ellenshaw, "we purchased two motion control down-shooter effects animation stands from Mechanical Concepts, in addition to four-perf and Vistavision pinblocks. Each of the kids was shot separately, bluescreen, so we had two bluescreen elements to start with. One of the kids was to appear as though he climbed out over the top of the pocket — he was on a ledge and basically just crawled out over it — and that was one element. The second element was Mandy on a rope, which was to represent the thread. That, too, was thrown off this ledge which was supposed to be the edge of the pocket. So we had the bluescreen element of the kids coming out of the pocket, but the pocket was moving around and we could not really duplicate that movement on stage. So Mike Lessa, our effects animation supervisor, took those bluescreen elements and pinblocked them, literally tacking them on to where the pocket was, frame by frame. It was recorded on a computer and then rephotographed onto a new piece of film in its correct position. Then rotoscoping was required so that they would go in front of the right things and behind the right things. The baby's arm was rotoscoped to allow the car to drive behind it, and a shadow for Adam was animated to really put him there in the street. After all these elements had been made, they went down to optical where, after a few adjustments, everything finally fit."

In an effort to divert the child from the city, Big Bunny — which has kept pace with Adam’s growth — is flown through the sky suspended from a helicopter. With bullhorn in hand, Wayne rides atop the stuffed animal’s head and tries to lull his child to sleep by singing a favorite lullaby. While long shots of the bunny swinging through the sky were realized with models photographed via motion control by Perpetual Motion Pictures, closeups of Wayne atop the toy were recorded on stage with a full-scale mockup head.

Two versions of the Lotus were needed to realize the car flight sequence. One was a miniature built by Design Setters for use with the baby in the bluescreen shoot. The other was a full-size car — donated and stripped down by Lotus — for full-size shots of Nick and Mandy inside. Careful intercutting between the two scales created the illusion of Adam manipulating the car in his hands. Design Setters model shop supervisor Henry Darnell and leadman Jim Logiudice built Lotus models in a variety of scales. “We made some tiny Lotus Elans for the baby to run around with,” said Darnell, “and those were one-thirty-seventh scale. They had working headlights and taillights and running lights — which was a challenge because the shots on the baby were too tight to run wires through his clothing, so we had to put batteries in them. Because it was such a time-consuming process to get good takes of the baby, and because the batteries didn’t last very long, we made three of the models so we could just hand off. As soon as one wore down, we could replace it with another one. Not only that, the babies would inevitably break something off of the model or throw it around, so we had to have backups ready to go at all times.”

When the ploy fails, Adam — now one hundred twelve feet tall — continues his march into downtown Las Vegas. Bluescreen elements of the baby were composited into live-action plates shot on location in the glitter capital.

Bluescreen elements of the baby were shot during postproduction. To facilitate matte extraction, mirrorplex was placed on the stage floor to create an all-blue environment.

In addition to the thirty-seventh-scale models, Darnell and his team also built a Lotus Elan in one-twenty-eighth scale — to be used in a handful of shots where some six-year-old children stood in for the baby — plus another in twentieth-scale to be used in conjunction with an adult stand-in. “They found a guy who worked in production,” Darnell explained, “whose hands were rather babylike — they were kind of soft and chubby. So they had him do some of the more intricate actions, anything that required more coordination than the baby could handle. That model had working windshield wipers and lights, and was also powered by batteries.”

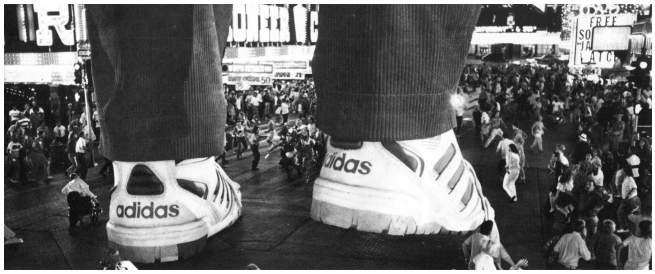
Shots of Nick and Mandy inside the car, with Las Vegas zooming past them in the background, were achieved by mounting a stripped-down Lotus on a special gimbal rig built by Peter Chesney. Background plates of the city were rear projected behind the vehicle. Chesney had constructed a full-size, lightweight mockup of the Lotus from scratch, but had determined that the stripped-down real cars were more workable. “It was actually cheaper to use the real cars,” Chesney observed, “because our model was so expensive to manufacture. It would have needed an entire frame and substructure to work on the gimbal mount. We designed the gimbal mount

to rock and roll the car in a variety of positions. It was manually powered, with eight people on it to move it back and forth or around." Some shots in the sequence required the car to spin completely around. Chesney modified the pivot points on the gimbal mount and installed an electric motor to effect the spinning movement.

The rear-projection plates for the sequence were a combination of live-action plates shot in Las Vegas, still photographs and film plates photographed by the 'Chesney-cam' — a camera rig set up to reveal Nick and Mandy's POV from inside the car as it flies around. "For one of the scenes where the kid is playing airplane with the car," Chesney explained, "they needed a POV of it swooping down into the street and back up again. So we built our own remote cable camera system. They had attempted a shot with a stage crane, but it did not have enough speed to do what they wanted. So we rigged four cranes that would enable us to basically sling the camera through a full city block. We hid the cranes at the intersection of the street, and then bridled between them with heavy steel cables and pulled them up tight. Then I ran some dacron line between them so I could run the camera from a height of about eighty feet down to three feet, then back up to about forty feet at thirty-five miles per hour. We released it with radio controls and had a little emergency brake on the camera."

Much of the optical work for the car flight sequence was done by Perpetual Motion Pictures. PMP also shot a number of the rear projection plates that were used behind Peter Chesney's gimbal-mounted Lotus. Other plates were produced quickly and inexpensively by Henry Darnell at Design Setters. "A photographer and I spent an entire night driving up the strip on a scissor lift taking still photographs," Darnell elaborated. "From those photographs, we generated transparencies that were clear in the areas where the building lights were. Then, using various transparent paints and gels, we were able to simulate the neon signs. We also used a polarizing material and a filter to create the animation in the signs — the look of the neon chasing lights. In the film it just looks like streaking lights, because it moves by very quickly, but it is still pretty effective. In dailies one day, Randal Kleiser was looking at our backgrounds and he was trying to remember when they had been shot on location in Vegas. So they fooled him — which pleased us."

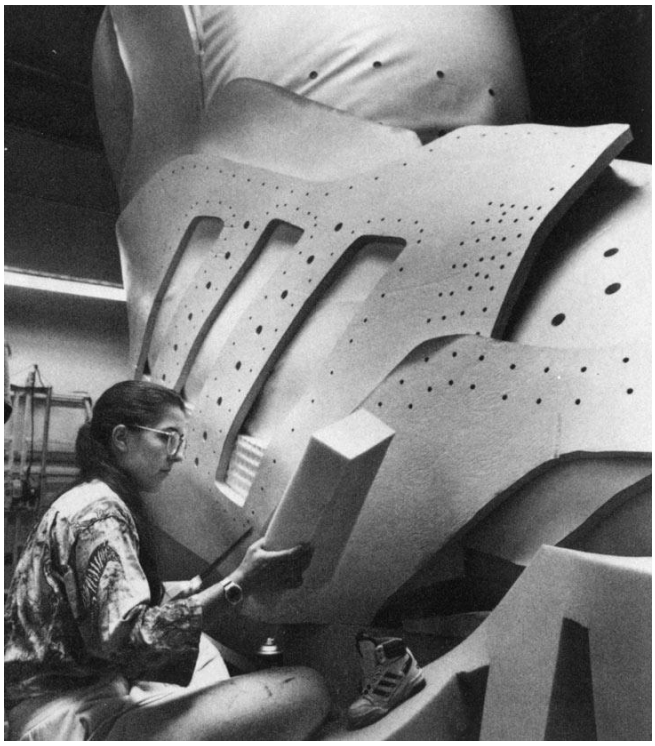
In the course of playing with the car, Adam knocks into a palm tree. "In the plate," said Habros, "the production had done something to make the palm tree move on cue; so we had to sync that up with the bluescreen element of the baby playing with the car. We also had to animate the car headlight on the tree, rotoing it exactly to the fronds and diffusing it. Also, the taillights weren't quite bright enough, so we had to add lights there. Heather Davis did all of that roto and animation." A shot of the infant knocking over a telephone booth was another bluescreen element matted into a live-action plate. Like the babysitter-at-the-door shot, more than one firm had a crack at the phone booth shot until, finally, a composite by CIS was chosen. "Both Sony and CIS did versions of the shot," said Muscal, "and we took the 'winner.' In fairness to Sony, both of the shots looked really good. But when we got to the release print stage, the CIS composite was better for color and content."



For street-level shots of Adam walking through the casino district, giant-size baby shoes were constructed by Image Engineering. Although basically stationary props, the giant shoes could be mounted on a crane and lifted to simulate a partial stepping motion.

Both eight-foot and seventeen-foot versions of the baby Adidas were built. Framed in plywood, the constructs were filled in with carved styrofoam, then covered with textured vinyls. Half-inch-thick rope represented the threaded stitching, while hundreds of feet of shoelace were hand-woven by Chesney’s crew.

Also contributing to the car flight sequence was 4-Ward Productions, which provided shots revealing the Lotus as it crashes into a neon sign. “There is a scene where the baby takes the car,” said Dennis Skotak, 4-Ward’s director of photography, “and he swipes it across a building, wiping out all of the neon. So there are bulbs breaking and sparks flashing. We toyed around with ideas and came to the conclusion that the best way to do it was with plexiglass rods. If we had used real neon, that would only have given us one take for each one. So we represented the neon by pumping light through plexiglass rods. The actual location also had little bulbs alongside the neon, which we simulated with front projection material. We made up a mold for the bulbs and cranked out a bunch of clear resin bulbs, behind which we put scotchlight material in line with the lens. As the camera traveled across the sign, these bulbs would light up sequentially. It was a practical solution to something that could have been very expensive and time consuming.”



An Image Engineering team member at work on one of the giant shoes.

Most problematic of all were the sections of tubing that had to break as the car brushed against the sign. “The tubes that had to break were made of frosted glass,” Skotak explained. “We experimented with different ways to break these glass tubes. They were delicate, but we couldn’t find an easy way to break them. Finally we set up a rig and put up a wall that was angled forty-five degrees — so that we would have the help of gravity in making the pieces of glass fall. We set the car up to travel across the face of this wall; and as it went across, contacts were made. Pyro charges had been set into the tubes to shatter them as the car made contact. The actual piece of wall was quite large — something like sixteen or eighteen feet long. So the car had to travel quite a distance and it had to do it very quickly because we were overcranking. We wound up traveling that distance in about five seconds, which was really fast. So it was a matter of timing. The pyro had to go at just the right time, and the car had to move with the right timing.”

4-Ward also contributed to a subsequent sequence in which Adam tires of playing airplane and places the Lotus precariously on the boot of a neon cowgirl sign fronting one of the casinos. The weight of the car eventually puts too much strain on the cowgirl’s mechanically kicking boot and the sign begins to break, the Lotus teetering on its edge. With Nick and Mandy still inside, the car finally slips off and plummets toward the ground — until, at the last second, Adam catches the falling car in his hand. Shots of the car on the sign — nicknamed ‘Sassy Sally’ — and its subsequent fall, were achieved with a combination of a full-size sign and a miniature version realized by 4-Ward. “We rebuilt the Sassy Sally sign on the Disney stage,” said Peter

Chesney, “starting with the sign eight feet off the ground. So she was thirty-two feet tall or so. Les Dilley’s department built the plywood and the neon skins for the sign, and we made the steel understructure. It had a big hydraulic arm to lift the boot and another hydraulic cylinder to rock the car as it sits on the boot. It was the twenty-eight-hundred-pound car with the two actors in it. All the controls for the hydraulics were down below. In the story, the knee joint starts to fail, so the car is jerking its way down, about to fall. We shot that part of it. Shots of the car actually falling were done in miniature.”

Wide views of the car and sign with Vegas in the background were achieved at 4-Ward, with Steve Neill heading up the model shop and George Dodge and Robert Skotak handling photography. “It wouldn’t have been practical to try to shoot the full-size car falling off the full-size section of the sign they had built,” commented Dennis Skotak, “so Steve and Mike Hoover built both a portion of the leg and a Lotus in quarter-scale for those shots. The Sassy Sally leg was approximately five feet across. The full-size sign had been made of neon, but we used plexiglass rod bent to conform to the outline of the leg, then backlit it. Scotchlight material was also used in a few areas that were too difficult to backlight.” The sign miniature and Lotus model were positioned and shot against a bluescreen to line up with the locked-off Vistavision plate of the full-size sign and car. Then they were composited with background plates of Las Vegas. “It was a fairly simple bluescreen shot. The most difficult part was puppeteering the Mandy puppet — built by Steve Neill — dangling off the side of the car. It took a number of takes to get her feet kicking realistically.” To get the car falling from the leg, the quarter-scale Lotus was balanced precariously on the boot and then simply pushed off, dropping into a net below.

Additional shots in the sequence were achieved with a section of the Sassy Sally sign that was built in twentieth scale by Stetson Visual Services. Neon artist Larry Albright provided the delicate neon work. “The Guinness Book of World Records lists a model Larry Albright also worked on that held the record for having the most neon in the smallest space,” Stetson noted, “but this model beat it. It was quite a project to work on the Sassy Sally sign because miniature neon is as brittle as spaghetti — it breaks almost just by looking at it.”

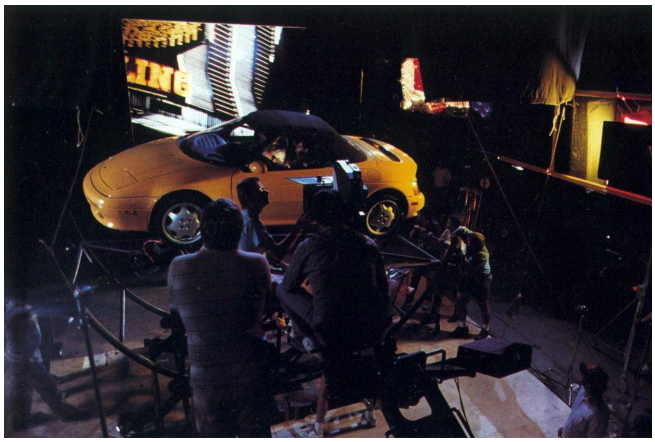
Richard Malzahn also shot a miniature Lotus to be matted into a plate of the real Sassy Sally boot. “It was a little six-inch model that we got from Design Setters. It was the easiest thing in the world to shoot because it was supposed to be just sitting there on the boot — it wasn’t moving at all at this point in the sequence. I had their Vistavision plate of the sign in Vegas, and I just put the car on a piece of plate glass, positioned the camera so that it would line up with the background plate, and popped off a piece for them to put in the comp. Then we matted in Adam and the city lights in the background. The only tricky part of it was matching the lighting because there was a lot of stuff happening in the plate. I matched the lighting directionally, and then optical finessed it to really fit it into the plate.”

“We discovered that there had been some kind of practical lighting machines or flashing units on either side of the plate camera,” Robert Habros added. “A crash of some sort was supposed to be giving off these flashes, illuminating sides of buildings. So one of the things we had to do to make Adam look like he was in the plate was determine which frames these flashes went off in. Heather Davis, our roto artist, went in and drew just a single frame highlight matte on the

side of Adam from the direction the light was coming from. Those kicked in a little bit of exposure to this animated matte, which made it look like he was flashed by the same light."

Perpetual Motion Pictures ultimately completed twenty or more composites for Honey, I Blew Up the Kid, in addition to their motion control shots. A consistent challenge for the PMP optical department — as it had been for all the companies producing comps for the film — was the correct scaling of the baby from shot to shot. "The production gave us workprints of the full-size tennis shoes for us to use as reference," noted Habros. "So we would know that Adam, in that particular shot, would have to be big enough so that when a person was standing next to him, that person would come up to a certain point on the shoe. We were also given visual references — for instance, the shoulders should come to the top of this particular building. Many of the storyboards dictated where his head should be in a shot, too. In one shot, his head had to be at the same height as the Sassy Sally sign. So we knew, for continuity, that his head had to be at that same height in subsequent shots. Sometimes we had to cheat it though, because of the camera angle. In long shots, if we made him tall enough so that his head came over the top of the sign, then his head would be out of frame in the next shot, just because of the framing of the plate." Another taxing aspect of the optical project was that the bluescreen elements of the baby had been shot somewhat generically, without specific shots in mind. "Tom Smith had shot the elements in such a way as to give himself as much leeway as possible. So they would center the baby, without worrying about his size or even framing him where he should be for a specific shot. They shot the elements so they could be moved around and made larger or smaller, which gave them the creative freedom to piece together a shot after the fact."

In an effort to lead the child to the outskirts of town, Wayne and the authorities direct Adam's attention to an ice cream truck — driving at full



Tripping on a shoelace, Adam falls to his hands and knees, allowing Nick and Mandy to escape the pocket by scaling down a loose overall thread. Landing in a Lotus sports car below, the teenagers are soon airborne once again when Adam spots the shiny 'toy' and proceeds to play airplane with it. For shots of Nick and Mandy inside the swooping vehicle, Chesney mounted a full-size Lotus on a manually powered gimbal rig which provided tilting and banking moves. Background plates of Las Vegas were rear-projected behind the car.

Tiring of The Game, Adam places the car on a neon casino sign, shot both full-size and in miniature. In a subsequent scene, the car tumbles from the giant cowgirl's boot. Executed by 4-Ward Productions, the sequence required both an illuminated sign and a Lotus model built in one-fourth scale. To marry their miniatures with the live-action, 4-Ward shot the quarter-scale sign and car bluescreen, then aligned their element to a locked-off Vistavision plate of the full-scale sign and car.

speed down the street — by turning off all the lights on the Vegas strip in sequence. A long shot reveals Adam walking down the street behind the ice cream truck as the buildings are blackened one by one. Buena Vista composited the shot. “It was one of the most successful shots we have in the film,” Ellenshaw commented, “but it was a real problem for us. The plate of Las Vegas was shot at nine inches off the ground; and when we went to shoot the baby — who was something like one-twentieth the size he was supposed to be — we had to scale that nine inches accordingly. So our camera had to be at one-twentieth of nine inches off the ground when shooting the baby — which meant that the center of our lens had to be at something like five-eighths of an inch off the ground. Good luck. So I learned a big lesson from that — which was to try and convince people not to do shots nine inches off the ground.”

Although Adam eventually overtakes the ice cream truck — and helps himself to a bite from the giant ice cream bar atop the vehicle — the ploy succeeds in luring the child towards the outskirts of town. It is here, drawn by a giant neon guitar, that Adam approaches the Hard Rock Cafe. The entire sequence was conceived late in preproduction. “Originally,” Randal Kleiser explained, “Adam was to go from downtown Las Vegas to a power station in the desert; and that was where the climax of the film was to take place. We had already found the location, but something continued to bother me about it. I finally realized that once we had been in Las Vegas, with all that neon and glitter, a dark power station was going to be anticlimactic. We had seen the Hard Rock Cafe on a location scout of Vegas, and we decided to use that for the climax, just to make it as interesting visually as possible. I really thought of Vegas as a character in the film, at least in a visual sense.”

One shot in the sequence, from inside the cafe, reveals Adam walking past the window. Chesney’s giant-size shoes were set up in the parking lot of the real Hard Rock Cafe in Vegas. “There were a lot of logistics involved,” Chesney revealed, “because we had to dodge the buildings and the cars; and we were dealing with power lines so we had to scout all of our paths and find out where the wires were high enough for us to move the shoes with the cranes.” Another logistical concern was that the scene featured dozens of extras running around in close proximity to the shoes, making safety precautions a primary consideration. “The moves were practiced beforehand to check for stability in the cranes, and there were a lot of safety margins built into the rigging hardware.”

As patrons of the cafe run wildly from the approaching giant, Adam plucks the huge neon guitar from in front of the building and begins to ‘play.’ Several illuminated models were built by Design Setters. “We created one guitar that was about twenty-five inches long,” Henry Darnell said, “which was used with the actual baby. We also built one that was fifty-six inches long for Alex Daniels in the baby suit to carry around. We covered them in scotchlight material, which is basically glass beads that bounce back light at a high intensity. A beam-splitter was used to direct the light onto the guitar when they were shooting, and that light was reflected straight back into the camera.”

Buena Vista completed the illusion by adding a cord coming out of the guitar. “When the guitar was pulled from the ground,” said Ellenshaw, “an electrical cord should have still been attached to the guitar — how could the guitar still be lit up unless there was a cord going to the power? But in subsequent shots where the baby was playing it, there was no cord. We were going to

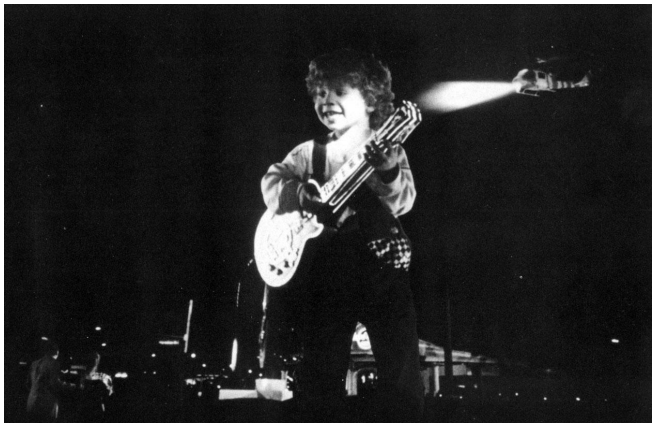
animate a cord in, but then decided it would be better if we used a real cord and tracked the end of it to the guitar. So we had a real cord on the stage and we put it on a modelmover and we tracked that."

Stetson Visual Services built a breakaway version of Darnell's sixteenth-scale guitar for a later scene in which Adam — who has been hit in the hand with a tranquilizer dart shot by Hendrickson — drops the instrument and sends it shattering to the ground below. "Our guitar was made out of lead and breakaway glass," Robert Spurlock explained, "and we just used paint on it because the lights have supposedly gone off the guitar as it falls. We rigged one of Henry Darnell's guitars to slide up and down a large track and carriage system, which we designed and built. We built our replica guitars in breakaway materials and registered them to the same track so we could run — at high speed or motion control speed — Henry's guitar going down the track and into the pavement. Then we could run our breakaway guitar down and into the pavement and register one to the other. That way we could use the detail and lighting of Henry's guitar and the breakaway gags in our guitars, all in the same shot. The last section of the track was removable, so we could carry the beauty pass guitar down below the pavement, and we could marry the two images after the breakaway guitar started to crash. Then we could remove that last track section and have a clean frame for dropping the breakaway guitar. With this method, once the elements got into optical, they had the option of either making a hard negative cut from one to the other, or trying to actually match the images together."

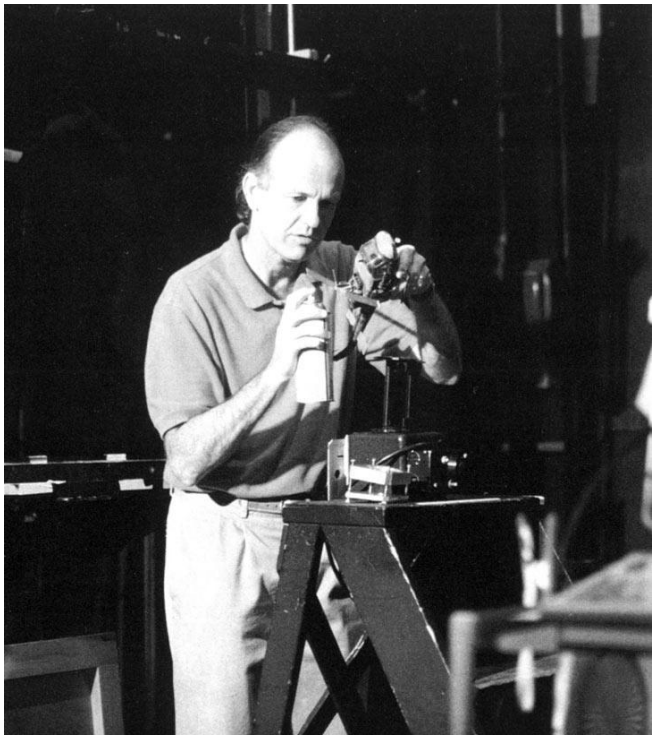
Buena Vista, which composited the shot, also rendered some effects animation to add sparks as the guitar hits the ground. "It had to be very exciting visually," said Ellenshaw, "without being dangerous. When the model was photographed falling to the ground it was pretty spectacular. But the debris went flying toward camera. When we comped in the people who were supposedly running away from the falling guitar, it looked like they should have been decapitated by all this debris. So we went in and took some of the debris out of the shot and made a kinder, gentler guitar explosion."

Throughout the Hard Rock Cafe sequence, the helicopter carrying Hendrickson and his tranquilizer cannon is seen circling overhead. Buena Vista shot a one-seventh-scale motion control helicopter — built by Stetson — and matted it into a complex scene that included elements of the baby playing the guitar, interactive lights and location footage. "We shot the helicopter against an orange colored screen rather than bluescreen," explained Ellenshaw, "because it gave us better matting characteristics. Les Bernstien, one of our motion control cameramen, helped us refine this technique. Blue does not allow detail like orange does; and since in this case we didn't need to pull a matte in optical from a bluescreen — because we were shooting separate passes — we could take advantage of using the orange screen. We would not have been able to shoot a real person this way, but it worked fine for a motion control model. As long as we could do a repeatable move to shoot a matte pass, we were all right. The trickiest part, as always, was scale. With a one-hundred-twelve-foot baby and a helicopter in the same shot, you have no way of perceiving that the helicopter is on the same plane as the baby — that helicopter could be ten miles away. So one of the design decisions we made for this sequence was to always have searchlights from the helicopter on the baby to help the scale. We took the light from the helicopter and made it coordinate with the light shining on the baby,

syncing it up. We also put in a separate airbrushed light element that was tracked on an animation stand and added to the helicopter and the baby bluescreen element.”

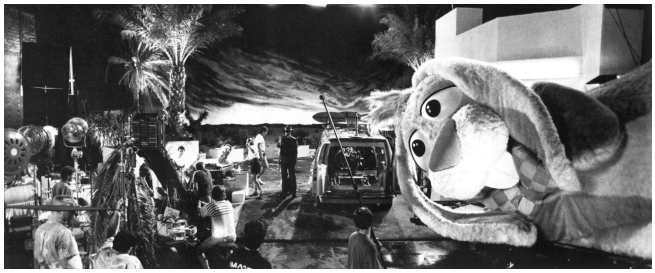


Adam disengages a giant neon guitar from its place in front of the Hard Rock Cafe and proceeds to ‘play.’ The composite included a bluescreen element of the baby and guitar, a live-action plate of the Hard Rock Cafe, foreground onlookers and a helicopter circling overhead. To clarify the spatial relationships, Buena Vista incorporated interactive lighting from the helicopter onto the baby’s face.



Built by Stetson Visual Services. the helicopter model was shot motion control at Buena Vista. Harrison Ellenshaw applies dulling spray to the model before filming.

Because the background aerial plates for the shot had been filmed from a helicopter and were unsteady, the bluescreen element of the baby dancing with the guitar had to be pinblocked into the scene. The shot was another electronic composite by CIS. “We really tried to master it at CIS,” stated Michael Muscal, “because it was the kind of shot that if you had to do it as an optical composite it would cost thirty to forty thousand dollars. CIS did an adjustment digitally to keep the baby in the landscape as it jumped around. They established two marks in the helicopter plate and, with a lot of effort, were able to keep the baby from bouncing around in the shot. It was one of their most successful composites.”



Diane submits to a blast from the enlarging cannon and, now a comparable scale to her son, soothes and subdues Adam so that Wayne can reduce them both to proper size. The happy outcome is marred only by the subsequent realization that Nick and Mandy were in the baby’s pocket when the shrinking ray was administered. For the last shot in the film, Buena Vista executed an expansive motion control move that begins on the minuscule teenagers, then pulls back to reveal the desert landscape and on-stage sunrise.

The baby’s play with the giant neon guitar is abruptly interrupted when he is struck in the hand with a dart from the tranquilizer gun. Hendrickson is taking aim for another assault from the circling helicopter, when a thundering noise is heard approaching. Suddenly, Diane — now blown up to Adam’s scale — appears at the open side of the helicopter. Ordering Hendrickson to ‘BACK OFF’ — in a bluescreen shot of Marcia Strassman’s face that was matted into a shot from inside the helicopter — Diane then plucks the helicopter out of the sky and places it on the ground. Strassman worked with Stetson’s thirty-second-scale helicopter for the bluescreen shot. “The model was on a stick, hovering in the scene, and it was shot high speed,” noted Stetson. “We were very cautious about Marcia working with the model because the blades were spinning very close to her face. So we made the blades out of balsa and paper; and because we were shooting high speed, they were spinning very fast with this little hairpin mechanism inside just barely holding it together. After one session of filming, she stepped down from the stage, stumbled and fell with her hand coming smack down on top of the helicopter, smashing it. So we had to rebuild it.”

Having been blown up in scale comparable to her unruly son, Diane manages to soothe and subdue Adam. The giant mother and son are reunited on the desert landscape in a closeup that had been shot on stage against black. “It looked kind of cheap,” Muscal asserted, “because we had shot it in a hurry. So we added stars and some eighth-scale traffic lights and road signs that Stetson built for us, and BVVE composited those into the shot.” In his giant mother’s arms, Adam is finally under control and Wayne is able to direct the shrinking cannon beam. Within moments, both Diane and Adam are returned to normal size. With Adam now an almost manageable three feet tall, Hendrickson fired and Wayne a hero, all ends happily — except for the fact that Nick and Mandy, who were still occupying Adam’s pocket when Wayne employed the shrinking cannon, have now been reduced to minutiae. Honey, I shrunk the kids again.

The last shot of the film reveals the teenage couple in a quiet, romantic encounter inside the Lotus. The mood is broken, however, when Wayne’s magnified eyeball appears at the side of the

car as he searches for the kids. As Nick motions his father away, the camera moves in a long pullback to reveal the desert landscape. The shot was achieved by BVVE. “The last shot of the picture is a real-time motion control shot,” stated Carolyn Soper. “It was the only live-action motion control shot that Chandler didn’t do. The bluescreen shot of the kids in the car was done with a motion control move on it, and then the background plate with Rick Moranis looking into the sand was shot with the same motion control pan. Then there is a wide crane shot back to the landscape. Matching motion control in different sets can be tricky, but with the added consideration of different scales it can be a real headache. And as tough as it is for effects, it can be a real challenge for the director. For that shot, Randal had to contend with the real-time motion control, a crane move and — just for some added fun — Quark the dog had to peer at a shrunken Lotus convertible that wasn’t there!”

Honey, I Blew Up the Kid was, for Buena Vista Visual Effects, both a personal test and an opportunity to prove their abilities to the feature film community. “The show worked out very well for us,” said Ellenshaw. “Tom Smith was pleased with our work, Randal Kleiser was pleased with our work — we hope it is an auspicious new beginning for BVVE.”

With Nick and Mandy reduced to tiny specks, the film concludes on a decidedly open-ended note. At the time of the release of Honey, I Blew Up the Kid, there was already talk at Disney of yet another sequel. The film’s subsequent modest showing at the boxoffice — compared to the original film — may have squelched those plans. If the project does go forward, however, it will most likely be with new leadership. “I still love effects,” Randal Kleiser asserted, “and this movie had just about every effects technique possible — CGI, makeup, bluescreen composites, split-scale. So I learned a lot about effects, which was one of my aims in taking this project to begin with. But I would like to move on to something else — maybe a really good science fiction picture with plenty of special effects.”

For the visual effects team, orchestrating nearly two hundred effects shots split among a dozen effects houses was an even prouder achievement than creating the illusion of a Godzilla-sized baby. “By doing the effects this way,” Michael Muscal concluded, “we were able to come in on a budget of about $7 million. And that included everything — all the contracting and compositing, all the post-photography costs and principal photography costs that involved the visual effects unit. That was quite a feat, especially since on Honey, I Blew Up the Kid, unlike most movies, the visual effects unit was working throughout the entire production schedule.”

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LIFE NEVERLASTING

image

article by
Kevin H. Martin

Famed horror writer Robert Bloch once claimed he had the heart of a little boy — pickled, atop his desk. A similarly mischievous spirit seems to be at work in Universal's Death Becomes Her, certainly the blackest of director Robert Zemeckis' adventure-comedies to date. In the story, matters of age have waylaid fading stage and screen star Madeline Ashton (Meryl Streep). In order to ensure that her face remains in a fine state of repair, Madeline steals plastic surgeon Ernest Menville (Bruce Willis) away from his fiancee, Madeline's longtime friend and rival Helen Sharp (Goldie Hawn). As the years pass, a dejected Helen allows herself to bloat into monstrous proportions, while Madeline's life with Ernest crumbles. The surgeon, his talents with a surgical scalpel now blunted by alcohol, turns to undertaking, while Madeline — whose repeated nip-and-tucks have failed to satisfy her — avails herself of a magic potion which acts as a restorative agent on her middle-aged features. Unbeknownst to her, Helen has also sampled the elixir, which confers upon the user not only youth, but immortality. In a succession of comically brutal episodes, each woman does her best to inflict maximum abuse on the other, repeatedly turning to Ernest to repair the damage. Finally, wanting no part of the youth-obsessed women or the immortality they offer, Ernest escapes to pursue a meaningful life. Madeline and Helen are left to endure both each other's company and their own bad paint jobs for all eternity.

In Death Becomes Her, a black comedy from director Robert Zemeckis, Meryl Streep and Goldie Hawn star as Madeline Ashton and Helen Sharp, lifelong rivals who share an obsession with youth and beauty. The feud escalates when Madeline marries Helen's weak-willed fiance, plastic surgeon Ernest Menville (Bruce Willis). Animosity between the women grows as Madeline becomes increasingly disillusioned with both her marriage and her husband's surgical efforts to keep the aging process at bay, while Helen, intent only upon revenge. falls ever more deeply into despair.

The story called for the transformation of the petite Hawn into a desperately unhappy and grossly obese Helen. Hawn was outfitted with prosthetics and a complete 'fat suit' — designed and created by makeup supervisor Kevin Haney and prosthetics expert Lance Anderson — in a

Having relished an earlier excursion into horrific comedy on an episode of Tales from the Crypt, Zemeckis had eagerly responded to the Death Becomes Her challenge. "I was really very happy to be able to get such a dark, savage comedy to a

makeup that required more than four hours to apply.

mass audience," Zemeckis affirmed. Exploiting recent developments in animatronics and computer generated imagery, the movie combines both with elaborate prosthetics and exhaustive optical and animation work. Zemeckis — who, along with Steve Star-key, also produced the film — reunited many crew members who had worked with him on previous genre outings. Director of photography Dean Cundey, physical effects supervisor Michael Lantieri, and production designer Rick Carter were among the alumni recruited. Another returning collaborator was ILM visual effects supervisor Ken Ralston, who had held the same position on Who Framed Roger Rabbit and all three of the Back to the Future films. Also on board for the outlandish ride were Tom Woodruff, Jr. and Alec Gillis of Amalgamated Dynamics, as well as prosthetic makeup supervisor Kevin Haney and legendary makeup designer Dick Smith.

Just as Zemeckis' previous outings had demanded that the audience suspend its disbelief enough to buy into the ideas of time travel and cartoon characters coexisting with human beings, Death Becomes Her sets forth the premise of a magical elixir which offers eternal life. Both Madeline and Helen partake of the potion and, even after enduring injuries that kill them — at least technically — their ravaged bodies live on. Throughout the film, the two suffer a series of grotesque, but cartoonlike afflictions, ranging from Madeline's head being twisted around backwards — the result of her fall down a flight of stairs — to a bowling-ball-sized hole through Helen's midsection caused by a point-blank shotgun blast. Although many such sequences would be achieved in part with makeup and animatronic effects, the most outrageous images would be computer generated. An early testing phase was initiated to determine whether or not digital techniques could be used to successfully achieve the effects. "It was not a test to see whether or not we'd be able to do the film,'' Zemeckis explained. "We knew going in that, if necessary, the shots could be done optically. ILM did a five- or ten-second loop of a girl with her head on backwards so we could see just how far it was possible to push the CG."

One of the challenges facing Zemeckis and the computer graphics team was that the live-action sequences that would require extensive CG work in postproduction had to be filmed at the front of the shooting schedule to allow ILM sufficient time to complete them. "It made things difficult for the actors and the crew," said Zemeckis. "It is really hard to dive into elaborate special effects work before you really have a handle on the movie. In Meryl Streep's case, I don't think she'd ever been in a harness or done action sequences before, so it was a brand new experience for her."

Computer graphics supervisor Doug Smythe found it necessary to muster new talent in order to complete the assignment. "We were using a new paint package for digital rotoscoping," Smythe said, "and we were having to train our animators on a new animation system. Some of our people had only worked on Macintosh computers before this, and they had to accustom themselves to working on Silicon Graphics computers, which some of them had used previously but never to this extent. So it did take a bit of time to get fully up to speed."

Brought in at the start of preproduction was makeup designer Dick Smith, who acted as consultant for the film's numerous makeup effects. Prosthetic makeups would eventually be designed to age both Meryl Streep and Bruce Willis, and an entire 'fat suit' would be created to

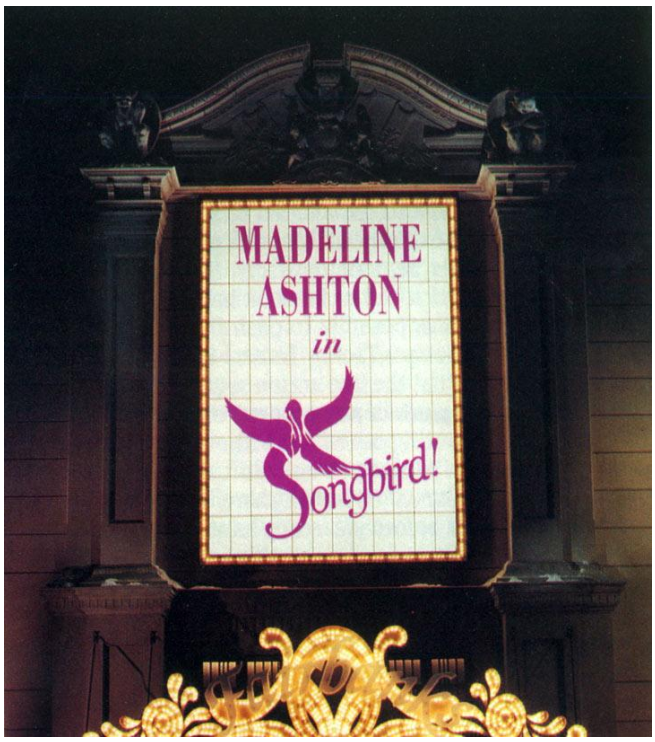
turn svelte Goldie Hawn into the bloated Helen. “For this picture,” Smith stated, “there were multiple makeup and effects questions that needed to be answered. I came to Los Angeles to discuss possible techniques for accomplishing these effects and to suggest candidates able to do the work. Meryl Streep had to go from about thirty-five to fifty years of age, and I recommended Kevin Haney as the key makeup artist for those appliance changes. Meryl’s aging makeup actually overlapped between prosthetics and traditional makeup, with Kevin creating the old-age appliances and Roy Helland doing Meryl’s beauty makeup over that. For the episode where Goldie gets fat as hell, Lance Anderson worked with his son David, creating appliances that added pounds to Goldie and made her ass jiggle as she walked.”

During preproduction, Haney spent considerable time and effort in an attempt to realize the twisted neck as a stage effect. One concept which underwent considerable research and development before biting the dust involved putting a Meryl Streep face on the back of the actress’ own head — which, if successful, would have greatly reduced the need for computer graphics work. “Lance Anderson did a wonderful, really dramatic twisted neck sculpture — based on work we did with an actual skeleton — and when he put Meryl’s face on it, everyone loved it. But when we got Meryl’s lifecast a while later, it just didn’t work. In New York, Dick Smith took an old Altered States lifecast of Blair Brown, sawed the head off, turned it around backwards and did a sculpture of his own. But after a couple of months, we realized it just wasn’t going to happen as a prosthetic only, so the backwards head went to ILM for realization.”

ILM art director Doug Chiang had already done a considerable amount of design work on the twisted neck and other somewhat macabre visuals called for in the script. “Ken Ralston had mentioned this weird broken neck effect,” Chiang recalled, “but no one had really come up with any designs for it. So I did some rough drawings. In terms of the direction taken and degree of bone protrusion visible, it seemed we were on the right track. Using people from around here as subjects, I did some photo-manipulation design work with Photoshop. The production office was very excited with the results, so we were able to nail the look of the twisted neck very early on.” Chiang found the medical research aspect of the project to be of interest. “It was a challenge to figure out how the tendons and vocal cords would actually react within a neck that was stretched like this. Originally, we had designs for the twisted neck that included bruising in areas where blood vessels had popped, but it was really grotesque and the color was rather sickening. We didn’t need to be that real, so the final look was toned down quite a bit.”

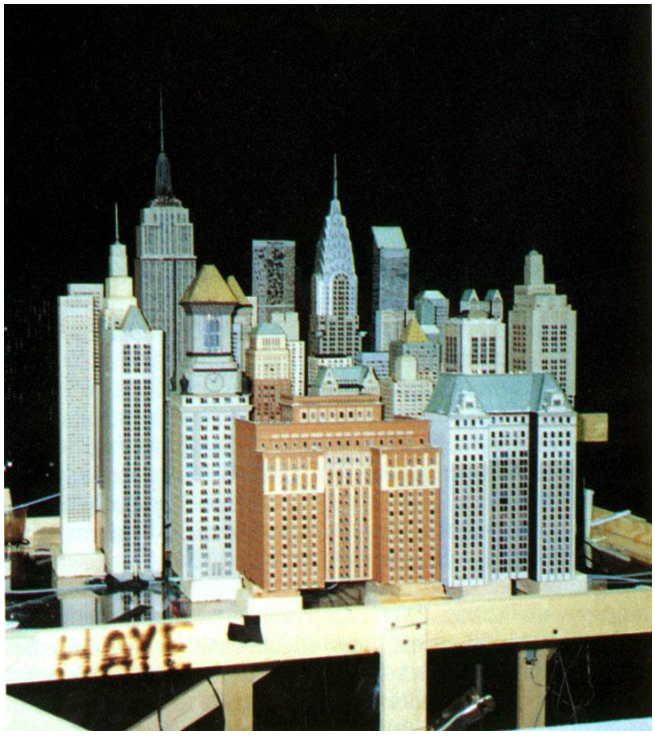
To augment ILM’s work, Tom Woodruff, Jr. and Alec Gillis were called in. “We provided on-set animatronics and robotic figures which became another aspect of the visual effects,” said Gillis. “Most of the sequences were storyboarded when we came on; the rest were boarded after a series of meetings with Bob, ILM, Michael Lantieri and Rick Carter.” One concern Woodruff and Gillis had at the beginning was the physical condition of Meryl Streep. “Meryl had recently given birth. While she planned to lose weight to get back into shape for the role, we had to make an educated guess about what she would really look like by the time shooting began. There was a similar situation with Sigourney Weaver on Alien 3; but in both cases, the women far surpassed our expectations in how terrific they looked.”

The movie also required a number of intricate miniatures, among them an elaborate facade of the Fairbanks Theater for an opening shot. Inside the theater, Madeline Ashton is on stage starring in Songbird, a dreadful (and blessedly fictitious) musical version of Tennessee Williams' Sweet Bird of Youth. Because his art department was overwhelmed with the number of designs required for the show, Rick Carter enlisted Doug Chiang to design the theater facade. "The first floor of the theater was being built full-size on stage," Chiang explained, "but everything from the second story on up would exist in miniature only. I came up with something that was fun — in a Gothic sort of way — and then worked with the set designers to ensure their set decorations matched the kind of detail I put into the upper floors." The shot begins with a view of the Manhattan skyline at night, then tilts down past a number of closer buildings before alighting on the theater. "That skyline is fudged quite a bit, but Bob Zemeckis and Rick Carter wanted key structures like the Chrysler Building, The Empire State Building and certain other landmarks to be clearly visible."



The film opens with a tilt-down from the New York City skyline to the marquee of the Fairbanks Theater where Madeline is starring in a dismally bad musical. The upper levels of the theater, marquee and city skyline were all built in miniature by the modelmaking team at Industrial Light and Magic.

The miniature cityscape and theater were the work of the ILM model shop, under the supervision of Steve Gawley. “We supplied many of the exterior nighttime architectural buildings for the film,’’ Gawley reported. “For the opening sequence, we constructed miniature representations of the Manhattan skyline that were positioned furthest away from camera. In all, about forty of these buildings were built. The skyline measured about three-and-a-half feet wide and three feet tall, with each building — most of which were two-sided — equipped with its own internal lighting.” To design the patterns for the buildings, Gawley’s crew employed a computer-aided design system. “One of our modelmakers, Jack Haye, executed those designs, which were then cut by laser.” Larger building miniatures in the mid-ground helped to register definite perspective shifts during the camera move downward.



Modelmakers Jack Haye and Jon Foreman designed and built the rearmost section of the city skyline. In all, more than forty miniature buildings were employed.

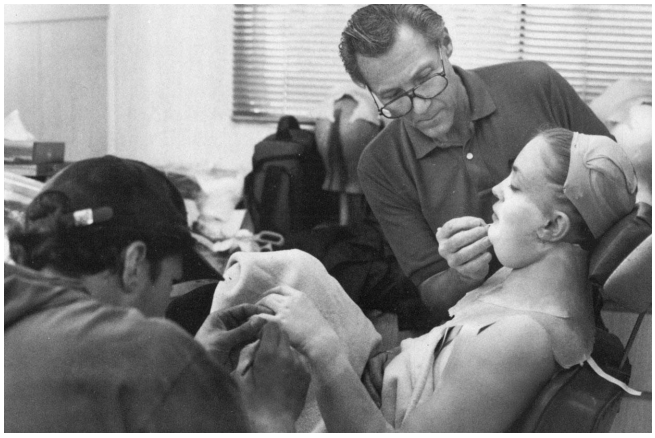
As the tilt-down continues, the facade of the Fairbanks Theater comes into view. “The theater was a large-scale miniature extending right down almost to ground level,” said Gawley, “leaving off just under the sign where the live-action plate began. The first floor was constructed on the Universal backlot and we copied the look of that. Richard Miller sculpted the frieze for the top of the theater which featured some terrific little gargoyles. We achieved a slushy snow look by sprinkling baking powder on the buildings. Chuck Wiley and Mike Lynch put the theater model together from wood with a plexiglass background for the marquee which was backlit with stage lights.” Miniature electronics designer Jon Foreman made use of the CAD system to design the thirty-five hundred marquee lights — all of which were programmed and motion-controlled to cascade and bloom during the computerized camera move. “The lights were extremely hot; so in order to conserve their life, we sequenced them to switch off while the camera shutter was closed.

Madeline’s anguish over her fading beauty leads her to the home of Countess Lisle Von Rhuman (Isabella Rossellini) who holds the secret of eternal youth. An establishing shot of her gothic mansion was realized with a detailed miniature

During the shoot, you'd see these tiny lights flaring up like flashbulbs." After the shooting of separate passes for the miniature theater and its chase lights was completed, the stage was blacked out and the Fairbanks sign was burned in on yet another pass.

estate. Modelmakers Mike Lynch and Marghe McMahon, at work on the mansion model, smoke effects, will be added optically. Effects art director Doug Chiang prepares the model for filming.

Optical supervisor Bruce Vecchitto and optical lineup crew member Jennifer Lee composited more than two dozen camera passes to complete the multilayered opening shot. "In addition to the various model passes, we had four different rain elements in the shot," Vecchitto stated. "We wanted a really wispy rain in the distance — so it would seem to be whirling and shifting in the wind — while at the same time having midground rain for scale and then a heavier foreground rain. That carried over into the live-action plate at the bottom of the tilt-down."



Throughout the film, Madeline and Helen suffer wounds and fractures which, because of the magical properties of the potion they have both ingested, prove marring but never fatal. A combination of makeup,-animatronic puppets and computer generated imagery created effects such as Madeline's broken, twisted-about neck and a gaping shotgun wound through Helen's torso. The makeup effort was headed by Kevin Haney — from design groundwork laid by consultant Dick Smith — with substantial support by Lance Anderson, his son David, and Michael Mills. Lance and David Anderson apply the fat suit prosthetics onto Goldie Hawn.

While Madeline cavorts and prances on stage before a rapidly-diminishing crowd, she unwittingly finds a new admirer in Dr. Ernest Menville, a plastic surgeon of some repute and fiance to her longtime rival, Helen Sharp. Madeline is quick to claim Ernest for her own, as both a husband and a home fix-it man for her fading face and figure. Helen, crushed by Ernest's desertion, is next seen seven years later, having eaten her way up to two hundred fifty pounds and wishing only for a means to avenge herself against the duplicitous Madeline. Realizing this monstrous weight change was one of the principal challenges for the makeup team. Kevin Haney, together with Lance and David Anderson, contributed conceptual art for the makeup effect, then made sculptures based on the approved design.

Miserable in his marriage and reinfatuated with his first love, Helen, Ernest pushes the shrewish Madeline down a flight of stairs. Madeline's twisted body at the bottom of the stairs was realized by a rod puppet created by Tom Woodruff, Jr. and Alec Gillis of Amalgamated Dynamics Incorporated. For a scene in which the bent and broken Madeline rises from the dead, the figure was operated by puppeteers stationed beneath the elevated set floor.

Originally slated to be shot late in production, but subsequently rescheduled to go before the cameras early on, the 'fat suit' became a pressing concern for the Andersons, who shifted over to work exclusively on readying the effect. "We had a life-cast of Goldie, but no body cast," said Lance Anderson, "so we had to use a body double. Unfortunately the proportions were off, so we had to alter the fiberglass cast afterward to conform to Goldie's body." In the meantime, David Anderson constructed before-and-after miniatures of Helen, enabling Zemeckis to see how different incarnations of the character would appear in three dimensions prior to the full suit's completion.

Sections of the suit were made of 'flabbercast' — a highly plasticized urethane with a jello-like consistency. Dick Smith had originally brought in a thimbleful of the solution, and the formula was subsequently refined into a mixture that could be used in much greater volume and incorporated into sections of the fat suit. "We actually only used it in the breasts and buttocks," said Anderson, "to give them the feeling of weight. Foam rubber has a lot less mass and substantiality than real body fat, so it wouldn't have been as successful in giving the effect of gravity. It did make the suit quite heavy; so I provided a sort of girdle arrangement for Goldie, with velcro on the negative side of the suit. We would just open the suit up and put it over her. We really needed this girdle to act as reinforcement and as a support piece so that the weight of the suit would be more evenly distributed around her hips and take some of that tremendous load off her shoulders. After that, she was able to keep the suit on for half-an-hour at a time without much difficulty."

The rest of the fat suit consisted of polyfoam for the torso, with separate foam latex appliances for Hawn's face, neck and arms. "The neck appliance was a donut-shaped piece — simulating the rolls of fat on her neck and shoulders — that went on first, around her real neck. Velcro tabs attached that to the fat suit on the bottom, and the top of the appliance we glued onto her."

Attaching the flabbercast to the suit, however, proved difficult. “It was like trying to attach jello to the foam rubber. It was murder, since its weight made it shear off downward. We had to make those pieces in a sack of sheer nylon, which extended beyond the flabbercast and was laminated onto the suit — the flabbercast material just hung there in these sacks. We wanted her boobs to lay out like real breasts when she bent over, so we cut the bottom of the breasts away so they would flop.” For the buttocks, another sack was employed, extending from Hawn’s back to the top of her thighs. When the actress walked, these two gelatinous globes would undulate. Last-minute help on stage from floor effects personnel and seamstresses enhanced the effect further through strategic additions of lead shot and careful cinching of the costume.

Application of Hawn’s makeup required four hours, with additional time needed for donning of the suit. Hawn, new to the prosthetic process, was initially claustrophobic about the experience. “The first time I applied the fat makeup,” said Anderson, “she had to get up and take a break every so often. She really didn’t know if she could tolerate the whole routine; but by the time we completed the makeup, she was comfortable with it. She looked in the mirror, saw that the makeup really was part of her character, and got very excited.”

Anderson was satisfied with the look of the suit, particularly under Dean Cundey’s flattering lighting, but remains dubious as to future applications of flabbercast. “Makeup artists have been looking at this material for quite awhile — just figuring out how to use it, really — but since it is so floppy and somewhat sticky, I don’t think it can be used for appliances. The floppiness was useful in this particular instance, but I’m not sure that I would use it again because of the weight factor. If someone had to wear it for the full length of a production, I don’t know how it would hold up. We need to do more testing on it to see if it starts breaking down after a certain amount of time.”

Helen’s gluttony and single-minded determination to seek revenge on Madeline eventually put her in a mental hospital. When we next see her, however — another seven years later — she is sleek and radiant, in stark contrast to Madeline who has become a decidedly aging beauty queen despite Ernest’s best efforts with the surgical knife. After much discussion, Kevin Haney — who designed Streep’s age makeup — determined that a subtle effect would be most effective. “After the opening sequence,” said Haney, “and right up till she takes the youth potion, Meryl is wearing full prosthetics — very subtle, fine appliances, but a lot of them. During the tests, she kept saying: ‘Madeline is not seventy years old, she’s only fifty. You don’t want to overdo this.’ And Bob made the point that Madeline wouldn’t have anything wrong with her face, since she kept having Ernest go back and fix it for her. We did do some tests with heavier appliances — eyebags and full nasal pieces — but it was a very fine line to tread, and so we scaled it back some. She wound up with tiny foam pieces for the jowls to give them a little sag and a small neck piece, but they did create some problems since she had to be lit and shot just right to maintain the look. Getting a makeup like that to look great all the time is very tough, and it wasn’t until we were well into shooting that I really got the look nailed and locked in.”

Haney tested a variety of materials for Streep’s age makeup before finally settling on foam latex. “We did a test with gelatin, and Bob liked the way it looked on set; but on film, the gelatin was catching the fill light and reading like an appliance. Also, the Pros-aide adhesive used for

gel appliances wouldn’t work on Meryl because her skin was too sensitive.” The usual advantages of gelatin over latex actually worked against Haney in this case. “Foam latex wrinkles, whereas the gelatin softens and becomes part of the skin around it. Stephan Dupuis used gelatin with great success on Cape Fear, but it did not work on Meryl because it wound up making her look younger. I’d still love to do a middle-age makeup in gelatin; this was just not the show for it.”

Problems with Streep’s porcelain skin continued to plague the production. “Meryl’s skin is so sensitive,” said Haney. “It is unlike anyone else’s I’ve ever worked on. It has that beautiful, delicate texture that always seems to be moving around and alive. As a result, any makeup we did on her had a half-life. Often, I would have to do her makeup twice a day, since her skin would move and expose the appliance. We had to develop new glues and application techniques for her. Very early in the testing, I was using standard Pax paint to seal the skin, but when I applied it to Meryl it broke into a myriad of wrinkles around the edges. The color would also change; it actually went gray on me. Duo adhesive didn’t work either. Finally, I came up with a matting agent called Pernod’s talc that I could paint directly onto the rubber and which acted something like a sealant. It had the advantage of shrinking a bit as well, and would curl the edges outward, which made application a breeze.”

Some of the most subtle makeup effects of the show were employed to transform a young and healthy Bruce Willis into a middle-aged alcoholic milquetoast. While not as startling an effect as transforming Goldie Hawn into a middle-aged blimp, the Willis aging makeup was among the film’s most challenging. “People didn’t know it was makeup,” said Haney. “The situation reminded me of what Max Von Sydow had to say about The Exorcist. People went on and on about the makeup on Linda Blair, who spent two hours in the chair, while Max — with a four-and-a-half hour makeup job — just got comments like, ‘Look how old Max has gotten.”

Both Haney and Michael Mills — who did the on-set applications of the makeup — took consolation in the old adage about the best effects being the ones not recognized as being effects. “The whole point of the makeup was to give him a bloated, ruddy-cheeked appearance,” remarked Mills. “Bruce’s hair was combed back, slicked down and thinned just slightly on top to suggest he was balding. Then we lightened his hair color, which made it appear thinner to the camera. Kevin had designed the makeup to include eye bags, upper-eye stipple, a stretched stipple forehead and a half-cheek appliance. The cheek piece actually started up at the corner of the eye, went down along the nasal labial fold to the corner of the mouth, then down the side of the chin and out to the midpoint between chin and ear. If you were to look at Bruce in profile, you’d see the front half of his face was rubber and the back half was the real him. That was the most difficult problem I faced, and the results we got are the work I’m proudest of.” As with all the makeups, lighting on the set was crucial. “Dean Cundey really understands how to shoot makeup. In fact, he was a makeup artist himself when he was a film student — and that helped enormously when it came to communicating our intentions to him.”

The aged — and desperately unhappy — Ernest and Madeline attend a reception in honor of Helen, who is promoting a beauty book. The couple is astonished to find Helen looking a good twenty years younger than either of them. Zemeckis used a new speed/aperture device, made by Howard Preston of Preston Cinema Products, to record Madeline's approach on Helen in slow motion and then, halfway through the shot, return the action to normal speed. "It is a computer system," Zemeckis explained, "which, while not quite perfected yet, allows you to coordinate your frame rate with the size of the lens opening. That way you don't wind up with an exposure shift when you ramp the frame speed up and down." Zemeckis employed the device several times in the film, most notably during a later fantasy scene in which Helen is trying to convince Ernest to poison Madeline. As Helen lays out the plan, Ernest imagines Madeline falling face first into a dinner salad. "When Meryl's head fell into her salad, we were running at forty-eight frames per second; then, as the camera whipped away, the frame rate dropped to just eighteen frames per second — without a flicker in the exposure."

Among the bizarre images called for in the story were shots depicting Madeline with her head twisted backwards on her body — the result of her fall. When attempts to accomplish the effect with prosthetic makeup proved unsuccessful, the gag was relegated to the computer graphics team at ILM under supervisor Doug Smythe. Both Meryl Streep and a body double were photographed wearing a blue mask to facilitate isolation and replacement of the head area. Streep's head was then photographed against bluescreen and 'attached' in a backwards orientation on the headless body. A prosthetic neck piece sculpted by the makeup team and digitized into the computer system provided the join between head and body.

Distraught over Helen's beauty and success, Madeline seeks comfort in the arms of her younger lover, only to find he has been two-timing her. Now truly desperate, Madeline drives to the home of Countess Lisle Von Rhuman (Isabella Rossellini) who allegedly holds the secret to eternal youth and beauty. At ILM, Steve Gawley's modelmakers were called upon to fabricate Lisle's castle-like mansion. "We received elaborate drawings from Jim Teegarden, the production art director," said Gawley, "which called for an exotic dwelling. The first story had been built full-scale on stage, but they wanted us to handle the rest. The miniature was just going to be a background element seen through a rain-drenched windshield; but the drawings seemed to call for a lot of detail, so we wound up working pretty hard on it. The mansion turned out to be one of the most beautiful models we'd ever done."

Alan Peterson acted as project supervisor for the six-foot miniature, which had vacuformed plastic detailing applied to a wooden structure built by Mike Cummins and Mike Lynch. While certain shortcuts were taken in detailing the towering estate, much of the work required

painstaking care. “We were able to repeat certain patterns in the brick throughout the model,” recalled Gawley, “but the entryway — which had to cut perfectly with the live-action — was all custom. The trees were made from SuperSculpey, a material which cures after heating, and the dead greenery on the grounds was a combination of etched brass and lichen.” At the last moment, a miniature car was needed, resulting in a rather frantic search through the model shop. “We ended up modifying a couple of kits to come up with something to match the German car that was parked in front of the mansion in the live-action.” Another late addition was the inclusion of practical lights on the mansion grounds. Also, lighted interiors — visible from outside — had to be created. “Doug Chiang selected photos from various architectural magazines and our still photographer, Kerry Nordquist, took pictures of them, from which small translites were made. These backlit photos were then mounted inside the windows. Mike Olague, our stage lighting expert, was responsible for lighting them.” The finished model — which took eight artisans a total of nine weeks to construct — was mounted on a twelve-foot table and shot by motion control cameraman Peter Daulton. The shot then went to optical, where rain, lightning flashes and headlights on Madeline’s car were added.

Once inside the mansion, Madeline is escorted to Countess Lisle, who introduces her to the secret of eternal life — encapsulated within a vial. Creating a look for the vial, its container, and the liquid within would involve several departments at ILM. “For the egglike container’s opening up,” Chiang recalled, “I first drew an energy-ball emerging. This effect was supposed to tie in to the mist emitted by the vial when it was opened — the same sort of color and activity, but more punch. For reflected glints on the glass table holding the vial, Gordon Baker did some wonderful animation and interactive lighting which we were able to dial up and down and diffuse somewhat.” The digital team also contributed to shots of the vial floating magically on its pinpoint base. “There were wire removals — or, in this case, prong removals — for several shots featuring the vial,” Doug Smythe recalled. “Sometimes the vial would be hung by thin monofilament thread; but when it had to be picked up and moved around, they set it on four little prongs, which we had to eliminate. This was a good example of how digital technology has become accepted. They know the prongs can be removed, so they just say, ‘Fix it in post,’ and go right on from there.”

Swirling inside the vial is Lisle’s immortality potion, which underwent numerous conceptual discussions. “Ken and Bob really expanded the concept on the potion shots,” said Chiang. “What was first just a few little light glints soon evolved into a swirling, pulsating light effect with a roiling motion not unlike a lava lamp. Since there was something vaguely feminine about the swirling shape, it was suggested we incorporate surreal female figures — sirens, if you will — which would swim around inside the vial, beckoning to Meryl. The feminine forms I first drew read mainly like disembodied heads. From there, it was a matter of refining and settling on an approach to get these images recorded on film while keeping in mind that the faces would need to register clearly through both the glass of the vial and the viscous potion within. Also, we didn’t want to give the impression that these figures were trapped in the vial. They had to appear to be drifting around as if they were at home and very comfortable in that environment.”

Using the computer, Chiang was able to refine the rather nebulous concept with speed and accuracy. “If I’d been doing pencil sketches — which would have been much more open to

interpretation — it would have slowed the entire decision-making process considerably. In the past, I had done a majority of my work freehand; but now I see that while those types of illustrations have their uses in the initial conceptual period, further down the line we have to be able to produce concrete, almost blueprint-like work so the production can buy off on it early."

To commit Chiang's designs to film, ILM's animation department was first called in. "Every department was busy trying to develop a look for the shots," noted animation supervisor Wes Takahashi. "We tried doing the vial with hand animation. We knew the shots were going to be fairly long and therefore labor-and time-intensive; but at that time, there were only a couple shots with the liquid flowing inside. Then we found out there were going to be a lot of additional shots featuring the vial, so the effect was moved from our department to the stage."

On stage, a mylar element was shot with colored lighting. "We tracked that stage element to the vial," effects camera supervisor Bruce Walters explained, "then added mattes to make the contents seem to fit within the vial. We also used a slitscan effect, with images of people floating around within the liquid in the vial. We put these figures on our rear-projected pinblock, then slitscanned them so they would streak around with a certain amount of distortion, occasionally allowing them to morph back into focus before stretching out again. Our effects cameras are all set up for streak photography, so we were able to take it from extreme clarity to the point where you couldn't tell what the image was. Charlie Clavadetscher did those figures using the same programs for shooting that were employed for the movement of the swirling liquid." Optical supervisor Brad Kuehn composited the elements for nearly fifty vial shots, aligning the swirling figures to the shape of the vial.

To demonstrate the potion's magical healing qualities, Lisle puts a dagger tip inside the vial, then uses it to inflict a small wound on Madeline's finger. "Arnie Wong designed the look of the potion for that shot," Takahashi recalled. "In the production shoot, the blade didn't really look like anything was on it, so he added the dripping fluid running down the tip of the knife." As the fluid enters Madeline's bloodstream, glowing highlights were added to Streep's finger, flowing down and illuminating the veins in her hand. For the effect, two-dimensional artwork was match-moved to the background plate. "The artwork was motion-controlled," said Bruce Walters. "We built mattes out of the artwork pieces, assembling them so each would track with a part of the finger. The veins were more backlit artwork."

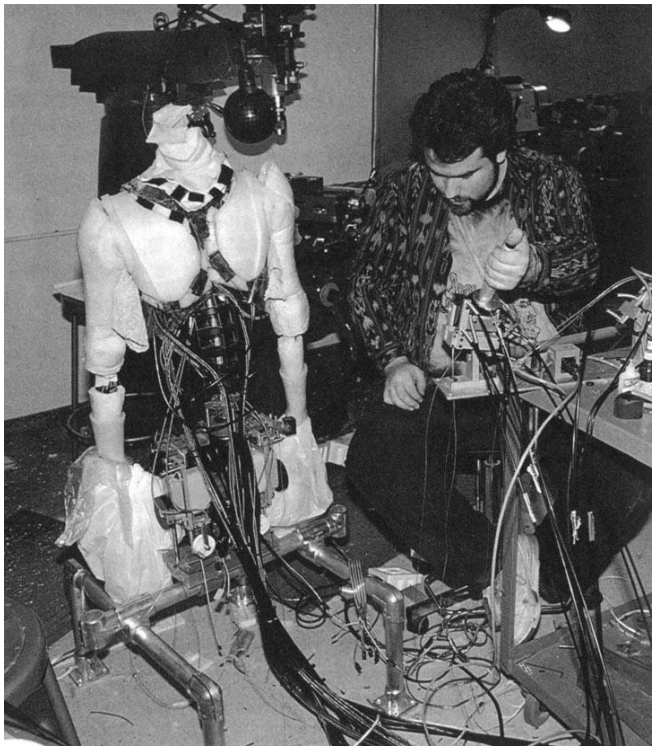
Within moments, Madeline's hand looks decades younger. Convinced of the potion's restorative powers, she makes a hasty financial agreement with Lisle, then downs the liquid. "I did a design that backlit her skull and jaw line," Chiang said, "which looked almost like an x-ray before slowly dissipating as the liquid passes down her throat." Ultimately, the look decided upon reflected more of an 'I am Joe's body' approach, continuing the glowing vein look established with the finger prick.

Augmenting the animation was the application of custom contact lenses created by Dr. Morton Greenspoon and Richard Silver of Professional Visioncare Associates, specialists in the manufacture of contact lenses for use in the motion picture industry. Dick Smith had initially contacted Greenspoon looking for an effect which would visually convey that the magic potion had been taken. "It was not unlike our work on The Incredible Hulk TV series," said

Greenspoon, “where the character’s eyes would change prior to his physical transformation. We tried various configurations and colors before deciding on a Barbie doll kind of purple for Meryl.” To minimize actor discomfort, Greenspoon prefers to work with soft corneal lenses rather than the larger scleral contacts often used for cosmetic effects. “We had our lens technician, Andrea Medina, on set for the whole shoot. She would insert and remove the lenses while also keeping watch on the actors for any signs of distress.”

Animatronic puppets built by Tom Woodruff and Alec Gillis were utilized for other shots of Madeline’s twisted neck and head. Effects crew members operate one of eight Madeline puppets created for the film.

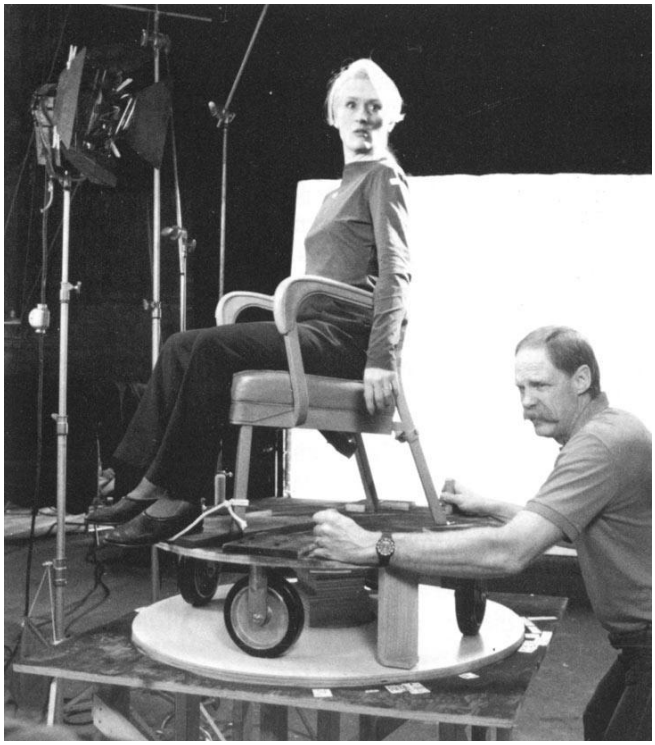
A panic-stricken Ernest confronts Madeline in a scene featuring one of the ADI creations. While all of the more startling effects involved the female leads, the transformation of Bruce Willis into a middle-aged alcoholic was one of the biggest challenges faced by the makeup team.



ADI crew member Chris Hunt tests the mechanisms on one of their puppet armatures.

Meryl Streep — wearing the blue lycra bag to facilitate optical removal of her head — rehearses a scene with Willis.

On her way out of Lisle's mansion, Madeline stops at a mirror to study her features, which magically begin to alter. A combination of on-set lighting, makeup and computer graphics techniques was required for Madeline's transformation. Streep was filmed in front of the mirror, both with and without the aging prosthetic appliances. "At first they were going to shoot the take of Meryl young before the take with age appliances," Haney recalled, "but Bob was concerned that Meryl's character would not be all the way there without the appliances, so the order of shooting was reversed. Meryl used the makeup to help her perform the character; she would move differently, her gestures and expressions would change — she essentially became another person right there."



For bluescreen shots of Streep's head, the actress was positioned on a rotating platform to create required head-turning movements.

To complete the transformation, the before and after takes were scanned into the computer; then, Doug Smythe orchestrated the morph which returned Madeline to youthful appearance. "Usually when we shoot a performer on set for a morph, we have to isolate them from the background, then composite them into a clean plate. But Meryl was able to match her body movements from the take where she is still aged with the take after she has become youthful. Meryl is the closest we've come to finding a motion-controllable person. Her ability to remember what she did physically on previous takes — down to very precise actions — was amazingly accurate." Despite Streep's precision, the morph was complicated by differences in the two takes. "In the first half of the shot, when we follow her over to the minor, there was more top-lighting on Meryl to increase the shadows and wrinkles and bags under her eyes. The makeup was rougher, and her hair was mussed up a bit. On the take of her after she has become young, there was different makeup and more traditional beauty lighting employed. One side effect of the altered lighting was that initially her chin cast a shadow onto her body. That shadow disappeared during the second take. Fortunately, it was so subtle it isn't really noticeable."

Stunned by the rejuvenation of her facial features, Madeline is even more delighted by the sight of her breasts on the rise. The gag had originally been planned as a mechanical effect that would be executed by the physical effects team under Michael Lantieri. Ultimately, however, Lantieri was dissatisfied with his results and Woodruff and Gillis were brought in to handle the effect — literally. "The breast-rising was the most fun we had on this show," Woodruff chuckled. "We worked with a body double to figure out what kind of rig would be needed. One idea was a body-hugging vest plate that would lift the breasts up on cue. In trying to settle on the exact kind of movement we had to duplicate, we lifted the model's breasts with our hands — and as we did that, one of us said, 'Wait a minute.' We went behind the double, reached in under her

shirt — keeping our hands flat against her body so they wouldn't show — and just pushed her breasts up manually."

The hands-on approach, while decidedly low-tech, worked. "We shot a video test of the effect," Gillis related, "and showed the first half of the shot to Bob. Once we saw that he liked it, we showed him the rest of the shot — with the camera coming around the side of the body double to show how we'd done the effect. I think that made the whole thing appeal to him even more, just for the fact of it being such a simple solution. It was one of those situations where a number of people had considered various complicated means to do the shot; but ultimately when we were up against the wall, we did it the same way any sixteen-year-old kid in the back seat of a car would have."

Helen arrives at the Menville house expecting to find Madeline dead and Ernest at long last free. Instead, she is confronted by the grotesquely misshapen Madeline who is livid at the discovery of her old friend's treacherous plot to steal her husband. A raging cat-fight ensues and, in the heat of battle, Madeline fires a shotgun blast at Helen which sends her flying into a nearby fountain. When Helen emerges from the fountain with a massive hole in her abdomen — yet still swinging — Madeline realizes that she, too, has been a client of the mysterious Countess Lisle. Helen's torso hole was achieved through both optical and digital means at ILM.

Madeline races home, almost interrupting a tryst between Ernest and the now-vampish Helen, who also sports Professional Visioncare's contact lenses — a subtle hint that her fabulous appearance has its origins in Lisle's magical vial. Helen leaves, and an ensuing altercation between husband and wife ends with Madeline teetering at the top of an enormous staircase — and a beleaguered Ernest pushing her from her precarious perch. This sequence was among several that utilized animatronic puppets built by Woodruff and Gillis. "Instead of foam, we used silicone for the skin appliances," Woodruff revealed. "It can be plasticized and withstand a lot of pushing and wrinkling while holding skinlike texture. Also it moves in a very lifelike way." Painting onto silicone is problematic at best — one reason it has not been used more widely in the past. "You usually end up trying various things, just hoping something will stick — it's a very serendipitous process. But our painter Gino Acevedo developed a new paint system in conjunction with the manufacturer of the silicone that really worked well for us."

"In using this new silicone," Gillis elaborated, "moldmaking and running skins become just as much of the artistic process as the painting is. You must have people who approach moldmaking as a work of art, and Yuri Everson, who did a lot of lab work for us, most definitely does. When you're painting on a translucent surface with thin washes, there is no way to salvage a silicone

piece. With latex you can opaque it out and start over, but with silicone if you get skins with bad seams or a mismatch in skin tone, you're sunk."

In fabricating their puppet understructures, Woodruff and Gillis used clear vacuform instead of the more traditional fiberglass. "There's much less weight involved," Gillis related, "plus it enables you to be able to see the mechanism inside. If you have to open the head for some reason, you aren't stuck mucking around in the dark." For the puppet's eyeballs, smooth, rounded lenses were created which, while lacking nature's corneal bump, still appeared strikingly credible. "Whenever we do a mechanical head, the eyes are made without any bulge at all," Woodruff revealed. "The camera is not going to read the absence of a corneal bump anywhere near as easily as it will a weird eye movement caused by such a bulge. We use an approach that works better mechanically, even though it may not be exactly right. Our mechanical designer, Dave Nelson, did an excellent job of mechanizing the heads."

Among their animatronic creations for the film were eight Meryl Streep puppets, two of which were built specifically for the sequence in which Madeline falls down the stairs. "When her head hits the stairs," Gillis explained, "you see it snap drastically sideways while the face suddenly grimaces. Afterward we had a rod puppet — representing Meryl as a tangled mass of limbs — which unfolded and restructured itself." Five puppeteers were stationed beneath the platform floor of the set to operate the puppet's leg, breathing and head movements, and literally raise Madeline from the dead.

As Madeline arises and slowly advances toward an unnoticing Ernest, there is a cut from the animatronic puppet to the real Meryl Streep — complete with backwards head. The effect would require both computer generated imagery and prosthetic support from Kevin Haney's makeup team. "In the scene," explained Smythe, "Bruce is making a phone call in the foreground, with the Meryl puppet on the floor behind him. At one point, we had Bruce suddenly stand up and move his elbow outward. That covered the puppet for about two frames, which enabled us to run a split. From that point on, it is the real Meryl in the scene."

Doug Smythe's crew was tasked with matching computer animation to the real Streep. "With most of our past work, we've either started off or ended with some kind of fantasy character. Here we had to match a real person. There were three things to contend with. We had Meryl acting backwards while wearing a twisted neck appliance built by Kevin Haney and a little blue lycra bag over her head so we could isolate the head for later digital removal; then, we had the backgrounds — clean plates — that were also shot motion control; the third element was Meryl's head, shot against bluescreen. For the bluescreen work, we had her sit down in a rotating chair that would simulate the direction she was supposed to be facing. To create the impression that she was actually walking through the set, there were computer-controlled dimmers on the stage lights — a big ring of lights all the way around her which simulated the changing light on her face as she moved through the room."

Because of the intolerance of Streep's skin to makeup and appliances, the twisted neck piece that would join the bluescreen head to her real body was also computer generated. "Initially we did a full twisted neck appliance atop her lifecast," said Haney, "which was then sent to ILM and scanned in. Then we cut the appliance in half since the top was going to be used for the

bluescreen shots of Meryl's head while the bottom section would go on her body for takes with her head in the blue bag. We applied the lower-half appliance, but Meryl developed a severe allergic skin reaction. We didn't want to make her go through that again with the upper half of the appliance, so that part of the scene fell out of makeup's domain and right into Doug Smythe's lap."

Smythe's team created the computer generated neck piece by first digitizing Kevin Haney's sculpture. "We used the same Cyberware software scanners we've used in the past," stated Smythe. "Then we took that data — not as a direct model for animation, but as a general mold — and made our own digital casting, using a controlled lattice twisted in the same direction as the neck. That way, when we wanted to untwist the neck, it would be much easier. We used the SoftImage animation package to manipulate the model."

Putting the CG body part on a living person was both a technical and artistic feat. "Our biggest challenge," said computer graphics production supervisor Judith Weaver, "was rendering the skin so that it did not have a computer graphic look — making sure the texture wouldn't seem plastic or too perfect. But Meryl's skin is so alabaster and perfect, it made things that much tougher. If she'd had freckles or a big tan line, it would have been easier." An equally challenging proposition was creating a seamless join between elements. "We had to put that neck on her body exactly right. Even though it was essentially just floating in three-dimensional space, it had to turn and move under the lights. You'd think that the fairly static shots would have been easier to match, but in fact the difficulty increased because the micro-shifts were extremely hard to deal with."

More angry than distressed at her predicament, Madeline gets her head on straight by unknotting her neck. To shoot the effect, Streep was again positioned in the rotating chair to facilitate the bluescreen photography of her head. "Meryl would twist her lips as if her hands were trying to push her face back," Smythe explained. "The stage crew would spin her around very quickly, and she would then groan in relief while the crew slowly rotated her to simulate her turn towards the camera. When we had her on the set doing the body movements, Meryl would make this great neck-breaking sound effect each time — I guess it helped her get into the spirit of the thing."

Ernest rushes Madeline to a hospital, where a shaken doctor — director Sydney Pollack in cameo — announces that Madeline has no vital signs. Woodruff and Gillis built a mechanical hand for Streep which Pollack, in the course of his examination, could bend completely backward at the wrist while the fingers still moved. At the news that she is dead, Madeline faints in shock and, mistaken for a real corpse, is removed and transported to the morgue. After a frantic search, Ernest retrieves Madeline and takes her home. Proceeding to wield his special mortician's tool — spray paint — Ernest manages to effect a restorative cosmetic makeover on his still shrill, but newly zombified wife. Dick Smith designed a color scheme for Madeline's spray-retouched look, which was later employed for Helen as well. A different look for the eyes of the dead woman was also devised by Professional Visioncare.

For the shot of Helen being blasted off her feet, special effects supervisor Michael Lantieri engineered a cable rig — attached to the ceiling of the set — to propel stuntwoman Denise Lynne Roberts forty-five feet through the air and into the small fountain.

As Helen rises from the fountain, water pours out of the blackened hole in her torso. ADI built a cable-operated torso puppet with a funnel at the top to direct the water flow. Later, a live-action element of Goldie Hawn’s head was match-moved onto the puppet.

Back at their home, the Menvilles are confronted by Helen. Arguments between the women escalate until Madeline pulls out a shotgun and fires on her old schoolmate at point-blank range. “We built a full dummy of Goldie from head to toe,” recalled Woodruff. “It was rigged to stand on the mansion steps, where Mike Lantieri’s crew rigged a pyrotechnic charge in the dummy’s midsection. When the shotgun goes off, you see flame and bits of ash fly outward as the dummy is pulled backward. They followed that with a stunt woman recoiling from the blast — being thrown back thirty feet in the air.”

When Helen arises from the fountain where she lands, Madeline — along with the audience — realizes that she, too, is one of the Countess Lisle’s customers. Now joining Madeline as one of the walking dead, Helen sports a gaping hole all the way through her midsection — courtesy of the shotgun blast. As part of his design duties, Doug Chiang had come up with a variety of concepts for Helen’s torso hole, from a charred wood look to a particularly graphic design that revealed Helen’s blackened spine. The final version is a straightforward, clean hole — medically incorrect, but less gruesome.

Hawn’s costume was marked for the live-action shoot to guide the ILM optical and digital teams in positioning her torso hole.

Woodruff and Gillis provided a puppet form for Helen’s resurrection from the fountain. “It was all cable-operated,” observed Woodruff. “The figure extended from shoulders to knees and was channeled with a hose that ran down through the neck. It was designed so that when the dummy stood, it would line up with a dump tank set overhead. The dump tank was then opened, allowing water to spurt down inside the puppet body through baffles and trickle out the hole in her body, both in front and back. Since ILM was going to match-move a live-action Goldie onto our torso, we didn’t bother putting a head on the figure.”

Bluescreen shots of Hawn’s head were combined with footage of the animatronic puppet. “With a combination of contrast extractions,” said Smythe, “we pulled mattes off the skin section of the puppet. That required a bit of hand cleanup work as well. We added some extra red fill light

to cast up onto the puppet body, since at this point the fountain was supposed to be filled with blood. The bluescreen footage of Goldie's head had a lot of that same reddish-pink lighting — much more evident than it was on the live-action shoot — so we needed to match the first part of the shot as the camera moves up the puppet body with the lighting on the bluescreen pass. Ultimately, the color correction took both elements to a midrange level, while ramping off the amount of correction as she moved up and away from the fountain. We used a digital pinblock to match-move the head footage and align it with the puppet movement."

The digital pinblock program — a fairly recent development that had been inaugurated on Hook and Memoirs of an Invisible Man — received a thorough workout on this film. "Almost every shot we put through digital utilized the program," Smythe asserted, "either for aligning Meryl's head to her body or putting in the backside hole for Goldie's stomach shot." The system allows for an animated background sequence which loops on the computer to be moved to any frame or played back at any desired speed. "There's also the foreground element — usually represented just by the outline of the shape so you know where it is in relation to the background. You also have the option of compositing the foreground element over the background, as well as moving the foreground north, south, east or west. You can rotate it, size it up or down, stretch it, and either set key frames or edit the motion curves. It's not unlike the Tondreau system used for traditional effects camera motion control." After the alignment of puppet and live-action had been accomplished, there still remained the matter of joining the two elements. "We used a program I wrote to smudge across that edge. Using information from the contrast mattes drawn on the seam area, the program produced a blend. It's really only slightly more complicated than averaging color values across the line."

While a dumbstruck Ernest looks on, the two zombie-women take their argument indoors and are soon bashing each other with a manic fervor not seen since Dynasty went off the air. Throughout the sequence, Helen's torso hole was achieved either through digital or optical means. "There are about twenty-eight shots with the body hole," Smythe recalled. "Ten were done digitally and eighteen optically. We worked out a means of doing the shots using only two-dimensional processing so that the same kind of look could be duplicated in optical."

In optical, mattes were pulled off Hawn's costume, marked with a black circle to delineate the area of the wound. "We went through five or six steps to pull the holes off," said Vecchitto. "We made isolation mattes — slightly larger than the actual hole — that were combined with the other mattes. Then we'd put the hole extraction through a few generations to shrink it down and soften it a bit, since the costume was supposed to be singed and the interior hole had to read slightly smaller. We then combined this with any foreground articulates needed." Difficulties arose in several shots that featured foreground objects crossing over the stomach hole. "It was a problem because any time we shrunk the hole down, we'd ruin the geometry of any sharp foreground object crossing over. So we had to go back and get articulate mattes drawn to fit correctly."

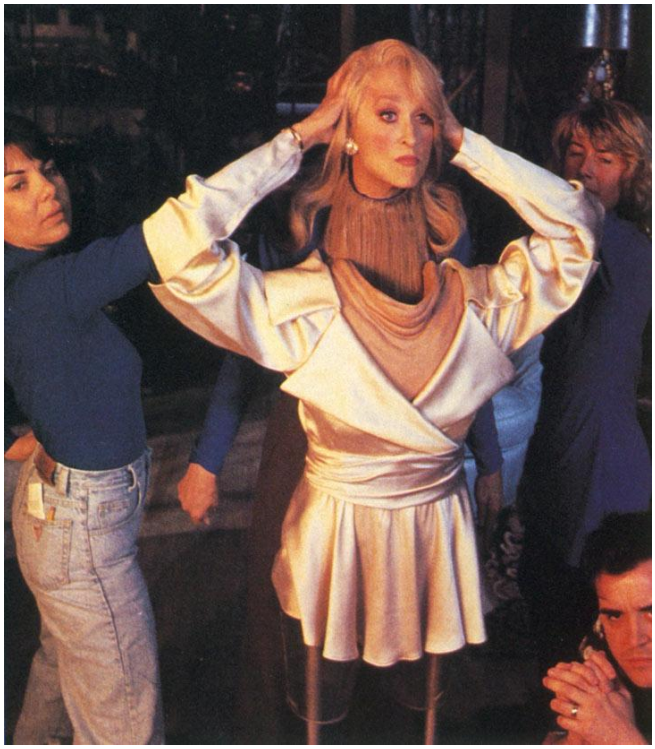
In the course of the fight, Madeline throws a broken shovel handle at Helen. The projectile passes completely through her adversary's torso hole and lodges itself in a couch. "Tom Rosseter, in lineup, gave each frame loving care," said Vecchitto. "We had to pull mattes off Goldie when she was standing before the couch. We split that couch out and had Meryl on one

side of the plate as she threw the handle — suspended on a wire — so it slid down into the couch. On the other side of the plate was Goldie. Meryl crossed over that split, and the handle had to be rotoscoped as it crossed over and passed through Goldie before entering the couch. There was also a shadow from the handle on her for three frames that really helped sell the thing. Altogether that shot took six weeks." Shots featuring the hole straight on were handled in effects camera through matched moves, then brought to optical for slight softening. "Hand animation was also used, primarily for shots with a great deal of perspective change on the hole. It was also used for the interior texture of the hole in these instances, which optical then burned in on a separate pass during compositing."

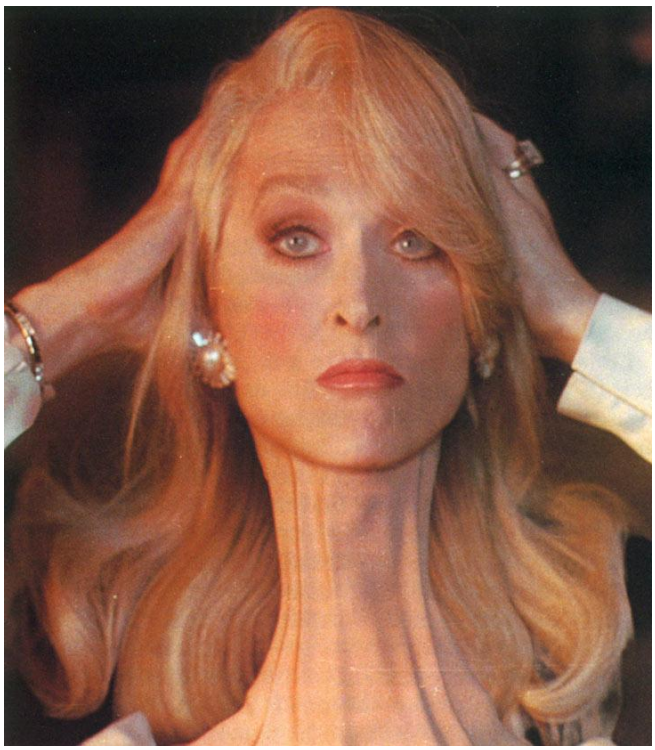
Madeline's broken neck justifies a number of bizarre sight gags, including one in which Helen smashes Madeline's head into her chest with a shovel. The gag was achieved in part with a fake torso built by ADI.

Animation also provided shadows — complete with appropriate holes — of the dueling women. “We did flickering, firelit shadows,” said Takahashi, “which were projected onto the far wall of the set. As a reference, I used Doug Chiang’s preproduction artwork, which featured one of our assistants in a dress with a hole right through her.” The shadow animation had been shot on stage and completed before the animation department was alerted to the fact that Goldie Hawn would be wearing pants in the live-action. “After doing this tremendous amount of work, what we ended up with was one shadow figure wearing a dress with a hole in its middle and a shadow figure in pants that didn’t have a hole in it. Since it is Meryl’s character who wears the dress in the rest of the scene, they are essentially reversed in the animation. So for that one shot, these characters are even more confused and screwed up than they are in the rest of the movie.”

Infuriated by the fact that her torso is now irreparably damaged, Helen gets in a number of blows against Madeline, knocking her head backward with a shovel — causing it to dangle down along her spine — and then mashing her head well down into her own torso. Both an animatronic head built by Woodruff and Gillis and CG effects by ILM were required for shots of Madeline’s head flipping backwards. “Our part involved building an animatronic head that was servo-controlled and capable of lip-sync,” explained Gillis. “That was the one time our animatronic head was full-face to camera, doing dialogue. We had essentially a motion-control system which allowed us to playback Meryl’s dialogue on one track and sync the time-code on the other track. We would do our puppeteering in the shop, refining the lip movements, and then record it so we could play it back on the set. The eye movements and other facial functions were done live, just for the spontaneity of the scene.”



In the following scene, Madeline pulls her head up out of her chest, elongating her neck in grotesque fashion. To accomplish the effect. Meryl Streep lifted herself out of the torso as crew members Dana Kuznetkoff and Cherylanne Martin simulated the neck stretching action by positioning their hands on either side of her head.

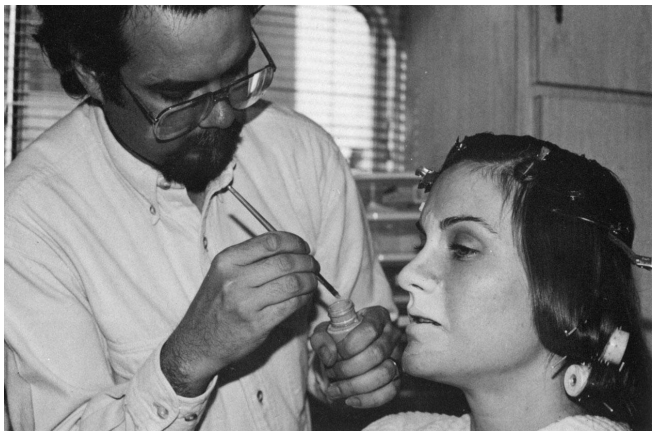


For the shot of the head flipping back up to its correct position on Madeline’s neck, a double for Meryl Streep was filmed wearing the blue bag and the animatronic head which hung off the back of her neck. Because the animatronic head weighed between ten and twelve pounds, Gillis and Woodruff padded the double and outfitted her with a harness to support the weighty device. “The double would flip the animatronic head up violently,” said Gillis, “and it would bounce off the padding we had on the back of her real head. The difficult part was getting a usable take before the animatronic head was completely destroyed. After about three takes, the eyes were warped and damaged because of the bashing.” In the CG department, Smythe and his crew removed the bluescreened head of the double and created a neck flap to cover the area beneath the animatronic head. “We then used the in-frame image of Goldie’s shovel for a split,” said Smythe, “putting Meryl’s head back in as her movement crossed behind and up over it.”

As the Fuller sculptor, Helen Madeline's head was first cut off the plate, joining Streep's head with the animatronic head built by Gillis and Woodruff was hung off the back of a body double wearing the blue mask. In digital, the double’s head was removed from the plate and a computer generated neck flap was created to join the animatronic head to the body.

Realizing that Ernest’s cosmetic skills will be necessary for their own continued maintenance, Helen and Madeline call a truce and join forces in an attempt to lure Ernest to the Countess Lisle and induce him to partake of her magical potion. When the unlikely trio arrives at Lisle’s mansion, they find a party in progress. Among the guests are a number of ‘deceased’ celebrities — including Andy Warhol, Marilyn Monroe and Greta Garbo — all rendered immortal by Lisle’s handiwork.

Woodruff and Gillis also constructed a puppet for shots of Madeline's head being squashed low into her shoulders. "We had an over-the-shoulder shot past Meryl," recalled Woodruff, "for when Goldie hits the dummy's head and collapses it inside the body cavity. Then we had our puppet version with Goldie in the foreground as the Madeline puppet gesticulates wildly. For the shot of Meryl pulling her head up, we had a fake torso she fit into. A couple of assistants on the production lent their hands to the shot since Meryl was using her own to raise and lower herself out of the torso."



Although celebrity lookalikes were cast in the cameo roles, their natural likenesses were improved upon by Kevin Haney's makeup team. Haney begins makeup application on Garbo lookalike Bonnie Cahoon.

Kevin Haney also contributed a makeup appliance for the effect. "Tom and Alec had come up with the look of Meryl with her head squashed down," Haney explained, "so we worked from that in developing the rest of the sequence. We sent ILM a hard copy of my appliance for Meryl's neck to use as a reference for how the neck would end up." Grabbing ahold of her hair, Madeline pulls her head back out of her body — and goes too far, stretching her neck comically upward. "We used a different computer graphics model for the follow-up to the turtleneck," said Smythe, "one with a wholly separate set of controls in it, since it didn't need to do a lot of twisting —just a stretch upward. We only needed some key poses at extreme positions, from radical contraction to maximum elongation. The animation package was able to interpolate between those models."

Having vented their rage in the vicious fight, the two women make up and come to realize that Ernest's skill with spray paint is going to be essential to their continued well-being. To ensure his longevity, they conspire to shanghai him to Lisle's where the doctor is tempted by a vial of potion and the eternal life it offers. But Ernest spurns immortality and charges out into the ballroom, where a party of other immortals — some of whom are recognizable luminaries — is in full swing. While celebrity lookalikes were employed for the party, prosthetics were still required to maximize the likenesses. "The Andy Warhol was a three-hour makeup job," Haney recalled, "and there was a lot of work on the James Dean and Greta Garbo figures as well. The Marilyn Monroe they had was pretty close, but Elvis needed a new chin and nose. Greg Smith did the first drafts on the lookalikes. Even though it was a throwaway scene, quite a lot of work wound up going into these characters."

Ernest is spotted by the women and races to the roof, many stories over the poolhouse below. As initially designed, the rooftop sequence encompassed approximately a dozen effects shots of Ernest scrambling across the roof, dangling from a drain pipe and then falling; but the shot load grew to more than four times that number. "More dialogue was added to help drive home the point of the story," recalled Smythe, "and with the new lines came more shots we had not anticipated. Most of the shots were opticals; only about five were done digitally, and some of those were wire removals for the rig suspending Bruce Willis above the studio floor."

Eighteen of the rooftop shots involved miniatures built by the ILM model shop, among them a large-scale replica of Lisle's home that was constructed for Ernest's dizzying look downward. "The model was in thirteen wooden sections we could bolt together," said Steve Gawley, "and it was designed with wild sections that could be swung out of the way as the camera passed through. Since the angle was toward the ground, Ken Ralston suggested putting some trees in, which were held up in midair by C-stands at the end of the set." As on the other building models, a combination of grain-of-wheat incandescents and photo transparencies were used for practical lights and the windows. The pool roof— through which Ernest soon plunges — was also a translite.

Most shots of the fourteen-foot miniature were combined with live-action stage photography of Willis, Streep and Hawn on the roof. One particularly difficult shot — which again was to pass through both optical and digital — was a down-angle following Ernest as he makes his way out onto the rooftop. "It was a big panning shot," recalled Smythe, "which our stage crew matched with a motion control move on the miniature building. That went to digital, because while the perspective changed pretty severely during the shot, the live-action pan had been done without motion control. There were little bumps and jitters in the live-action that were very difficult for the operators to duplicate when shooting the miniature. Plus, the miniature side wall of the castle had to fit flush against the live-action castle; so the match had to be very precise."

To facilitate the process, the effects camera team created mattes which tracked the action, separating the two pieces. "Whenever possible, we prefer to do this work in effects camera," Bruce Walters stated, "because anything that has a sharp, clean edge is extremely difficult to do by hand — those hand-drawn lines have a tendency to jitter. Anything with a hard line or a long, curved, slowly moving line, we do using motion control. Since we use a shape to track with, it doesn't move around — whereas in roto, the people have to draw their lines in the exact same spot, frame after frame after frame. Sometimes we had to track curved areas, like towers, and for those we broke the curved line up into pieces. There was a lot of body and fender work involved. Some of those shots looking down at the courtyard required seven or eight different matte passes."

Optical made contributions to the shot as well. "The decision was made to reach a certain point and then hold frame on the plate," Vecchitto recalled. "We didn't want to do this for the whole frame, so we split the plate out top, bottom and center to allow the center section with Bruce Willis to continue running. The upper and lower sections of the plate — and the miniature — were then held static. We wound up doing nine articulate mattes for the split, the model, and to allow for rotoscoping of Bruce as he crossed over. As the pan begins, we also had to put in articulates for the building's edge, to remove the stage lights visible back there, and to blacken the sky area, which had been flashed. Peg Hunter, in lineup, had a real brain-teaser to get this all figured out."

There was still the matter of seamlessly melding the bumpy live-action plate with the smooth motion control model move, however. "We use a process called 'de-bobbling' when we have two shots with moves that don't quite match up," said Walters. "Since the live-action pan didn't lock with the motion control model shot, we had to go in and take all that bobble out, creating a new

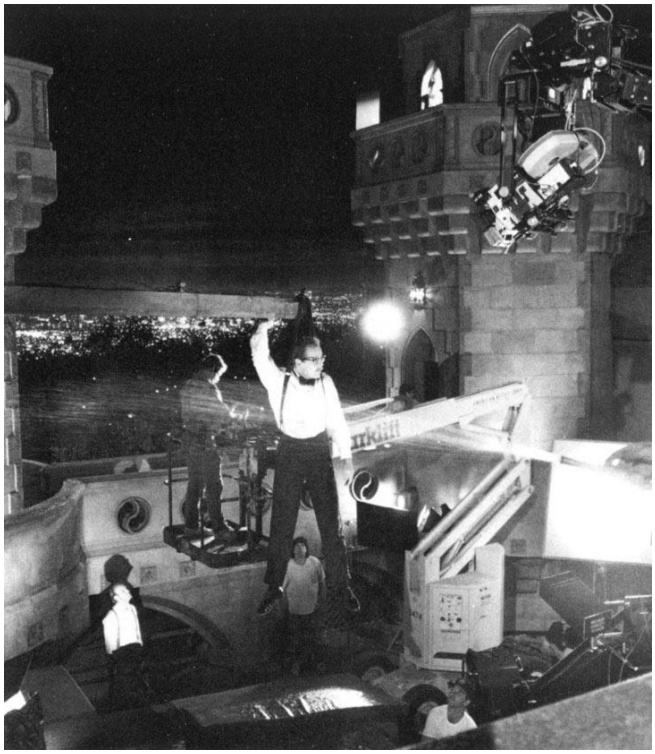
move to lock the two pans together, then add the bobble back in so that both parts of the shot would have it. It was important to keep the bobble since it gave us that natural look, but we first had to take it out to get the motion control move to conform with it."

One matte painting, by Mark Sullivan, was required for the sequence. "Except for the area Bruce Willis moves across," said Walters, "everything in the shot is painted. While lightning bolts aren't actually seen — just the effect of the clouds lighting up — Mark did a painting of clouds and we exposed that as a separate pass. We had another pass for interactive light, in which the castle was repainted with just the highlights illuminated from the lightning flashes. We shot this painting using rear projection and composited the shot in-camera. Rather than scraping away an area of the painting to project through, we took the painting out and replaced it with a rear-projection screen. It's very similar to latent image in that we shoot the painting with a soft edge on it, rewind the camera, put in the masked-off screen and rephotograph it. The advantage with this method was that we didn't need to shoot any Vistavision elements since we were able to finish the whole thing right there in four-perf. Whenever we do a painting with RP, we like to do it in the format used for the final film instead of going another optical step."

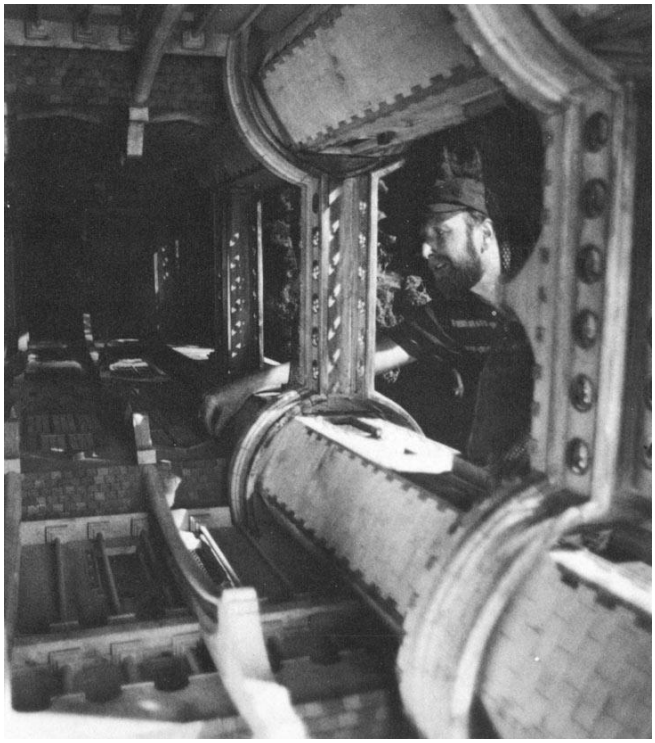
As the film now ends, Ernest makes good on his escape from the women — a resolution reached only after a last-minute reshoot involving all of the principals. Originally the epilogue — set decades after the events just witnessed — was to take place in Switzerland, with Madeline and Helen radiantly beautiful as ever, but plagued by deadly boredom. Ernest, who has continued to maintain both women, is there with his bartender-love — played by Tracey Ullman in a role rendered totally superfluous by the reshoot — aging gracefully and content with his lot. "We had two great old-age makeups for Bruce and Tracey," Kevin Haney recalled. "We tested here, then Michael Mills and Jerry Quist and I did the applications on location." Doug Chiang designed a striking last look at the eternal women for the unused conclusion. "We had a Psycho-type shot as the scene begins to fade out. We were going to see skulls superimposed — briefly, almost subliminally — over the faces of Meryl and Goldie." The design for Streep, complete with sunglasses, was amusingly macabre, echoing the look of the poster art from the actress' Postcards from the Edge.

After previewing the film with its original ending, Zemeckis opted for a new epilogue in which Ernest dies after a rich and full life. Madeline and Helen, still stuck together after all these years, attend the funeral wearing black veils, cackling to one another throughout the eulogy. The reshoot — which would involve makeup and digital effects — was hurriedly organized. "The original ending was soft," Zemeckis reflected, "and didn't keep with the tone of the rest of the film. Even though Bruce did a wonderful job acting the part of this gentle old man, and the makeup was really terrific, the problem was that you still knew it was the same Bruce up there that you'd seen for the whole rest of the picture. And we were asking the audience to accept all of this right at the end, which is tough; whereas you can ask the audience to suspend their disbelief early on — Goldie's getting fat is a good example of that — because you are still in the process of telling them what the rules of the movie are. By ending the movie at his funeral as he is eulogized, the audience could use its own imagination to envision how Bruce had turned out, which seemed to give the sequence more power." While all of the Switzerland material was cut, a print of Ernest as an octogenarian — actually a still taken during pre-location testing for the

Switzerland makeup — would find its way into the new, darkly comedic ending. “The photo was scanned into the computer,” explained Zemeckis, “and Bruce’s face was actually grafted onto a different picture — that of a mountain climber.” The picture was then scanned back out, enlarged, and hung in the church for Ernest’s memorial.

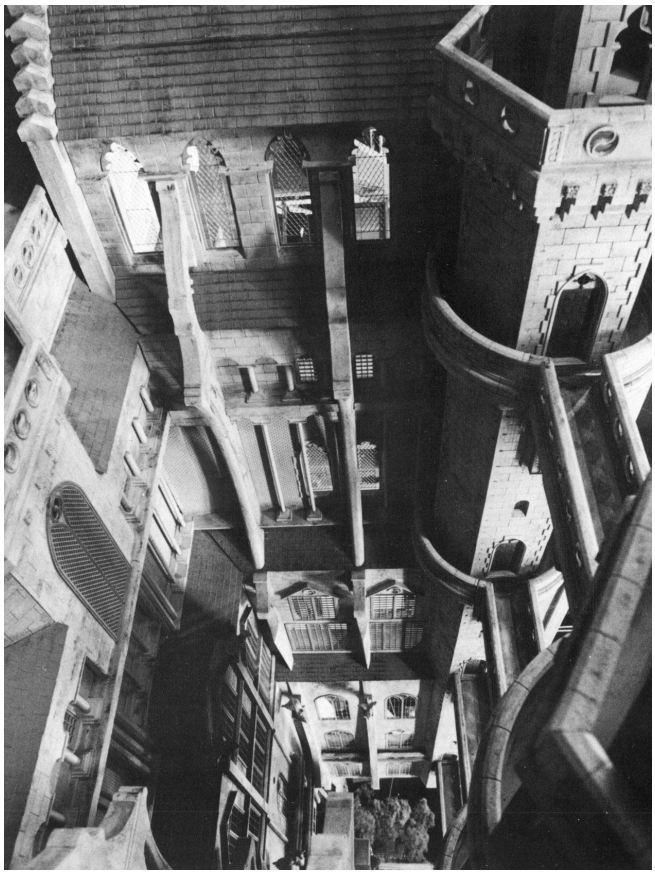


At the mansion, Ernest rejects Lisle’s offer of eternal life. Attempting to escape, he makes his way to the mansion rooftop. For a shot of Ernest hanging precariously from a drainpipe, Willis was suspended over the floor of the set by a wire rig that was later removed digitally.



The ILM model shop provided rooftop miniatures for the sequence, including a large perspective model of the mansion for a shot of Ernest’s POV as he dangles helplessly from the pipe. Model shop supervisor Steve Gawley inspects the fourteen-foot miniature which was built and photographed on its side.

As the funeral concludes, Madeline and Helen exit the church, only to slip on a mislaid can of spray paint. The odd couple tumble down the church steps and shatter into pieces on the pavement below. The scene continues with the women's heads spinning into view. Split-screen composites of the actresses' faces worked in conjunction with articulated dummies built by Woodruff and Gillis. "We went back to our original molds for the Meryl and Goldie puppets we had built," said Gillis, "and cast two sets of limbs and torsos that we could connect together in such a way that they would break apart easily. They were made out of urethane. We made two stunt dummies and then two dummies that would break apart. We worked with Michael Lantieri and his crew in rigging them and executing the effect on the set."



The completed down-angle miniature of Lisle's sprawling mansion. Backlit transparencies were positioned behind windows to suggest illuminated room interiors within.

"It took a lot of people on the set," Woodruff elaborated, "on either side of the camera, launching these dummies so they would hit in the right spot, making sure they would break apart correctly. Michael had additional crew members down below with monofilament to pull the limbs so they would continue their momentum down the steps. Then at the very last shot, where the heads spin around, ILM did their compositing of Meryl and Goldie's heads and we provided the background dressing of the broken limbs and all the debris, as well as one arm that had fingers tapping impatiently. That was an appliance on a hand double that came up through the set floor."

As we get our first good look at the women's faces, we realize that their beauty has deteriorated after years of their own, amateurish paint administrations. New makeups were required for both actresses, but with Kevin Haney on honeymoon in Belgium, Michael Mills was called back to handle the reshoot. Working under the gun, Mills — with Jerry Quist — produced the makeups in just five days, then spent a week on the actual reshoot. "We looked at a film clip of the earlier makeup to see what the ideal was," Mills said. For each character, he selected eight different colors — suggesting the women had been reduced to using whatever paint was available to them. "After spotting the stuff on, their faces literally became a patchwork quilt of color — some dark, some light, some yellow, some red — and the whole face had a Whatever Happened to Baby Jane? makeup on top, with real harsh rouge and badly-painted lips and eyes."

The short schedule did not allow time for mass production of foam latex, forcing Mills to consider other options. "I used a plastic appliance material I had learned about from Michael

Westmore — who, in turn, had learned it from John Chambers. It seemed like an appropriate situation to use this plastic, especially since it was easy to cast and dried quickly.” The same material was used to create peeling skin in other scenes covered during the reshoot. “We put the color down first and powdered it heavily for those appliances. We added a very thin veneer of cap plastic over the top and painted it with skin tone. Then a dental tool was used to cut into it, enabling Meryl to peel a big chunk of her rotting skin away.”

The flawless blend of makeup, animatronics and visual effects on Death Becomes Her was a collaboration between the effects teams and the film’s stars. “In my mind,” reflected Kevin Haney, “Meryl Streep is the ideal actress inasmuch as she can combine both the Method and technical matters in order to better her performance. Watching her figure out how a person would actually walk with her head on backwards — while wearing a blue bag over her head — was an incredible experience.”

Woodruff and Gillis also relished the opportunity to work with stars of such skill and reputation. “They were all extremely helpful,” noted Woodruff, “but we worked most closely with Meryl. She really took an interest in the effects. She even dedicated her time to assist our puppeteering — she actually rehearsed with us, showing us movements she intended to make that we could copy, as well as watching what we did and incorporating those motions into her own acting.” Woodruff’s partner was likewise impressed. “With Death Becomes Her,’’ Gillis concluded, “we got the chance to work not only with major film stars, but also stars behind the camera, like Bob Zemeckis, Ken Ralston and Dick Smith. Getting this project was a big thrill for us, since it isn’t every day we get the opportunity to do animatronic heads and bodies for major celebrities. I mean, who would ever have thought we’d be building a mechanical Meryl Streep?”

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Production unit still photography by Deana Newcombe. ILM still photography by Kerry Nordquist, Sean Casey and David Owen. Additional photographs courtesy of Amalgamated Dynamics, Steve Gawley, Kevin Haney and Lance Anderson. Special thanks to Lisa Van Cleef, Frank Rodriguez and Rick Porras.

QUICK CUTS:
PANIC ON LIBERTY ISLAND

article by John Shannon

Like the wondrous shot of Elliott and E.T. astride a bicycle, silhouetted against a giant full moon, some images manage to evoke the very essence and mood of a film in a single, unforgettable stroke. Equally effective in a comic vein was the image of actor Macauley Culkin holding his hands to his cheeks, his eyes and mouth open wide in a vivid expression of panic, leaving no doubt that poor Kevin had, indeed, been left behind in Home Alone.

For the inevitable sequel — which finds Kevin now stranded alone in New York City — Twentieth Century Fox came up with a marketing approach that would capitalize on the success of their original ad campaign, while adding a startling visual twist. Thus, the trailer for Home Alone 2 opens with an aerial shot of New York Harbor. As an ominous voice-over queries, 'Guess who's coming to New York this Christmas,' the camera draws in ever closer to reveal the Statue of Liberty assuming Kevin's trademark pose. The camera then flies into Lady Liberty's mouth, where the title is revealed against black. Commissioned to engineer the elaborate computer animation necessary to achieve the attention-grabbing effect was Metro-light Studios of Los Angeles.

Metrolight producer Mark Franco and director Jeff Doud determined that the most efficient approach would be to completely computer-generate the famous statue. "Originally," explained Franco, "we had been asked to do a hook-up to an actual helicopter shot of the Statue of Liberty, manipulating the live-action footage and doing our computer animation on that. But it was actually easier to shoot a blank skyline and create a computer generated statue that we could incorporate into that skyline."

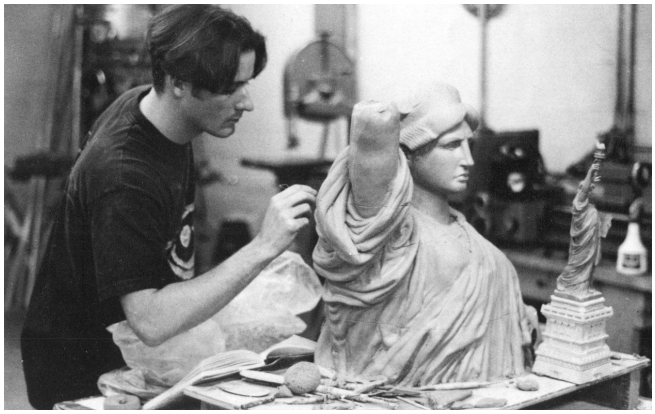
Since the inherent shakes and jumps of standard helicopter photography would have been nearly impossible to duplicate digitally, director of photography Ron Goodman used a Wescam helicopter mount to shoot a smooth passage over the harbor. That footage was digitally scanned and transferred to one-inch videotape, then made into a laserdisc. Motion tests against the background were conducted using a low-resolution database of the statue purchased from View Point Engineering to act as a temporary stand-in for a more fully rendered version.

To fashion a detailed statue in the computer, a twenty-four-inch bust of the Statue of Liberty was commissioned from Precision Effects. Two separate faces were sculpted by Michael J. Hood and Garrett Innel, then produced in fiberglass — one to show the actual expression on the statue, and a second to show the extreme expression that would be revealed at the end of the shot. By digitizing both versions, Metro-light would be able to effect a computer morph to interpolate between the two facial expressions.

The completed sculpture was digitized by senior modeler Alan Ridenour and used as a basis for a fully rendered computer model. Since the shot required a tight zoom-in on the statue's face, a high level of detail was necessary — detail that was difficult to ascertain since closeup shots of the statue are rare. "It is against the law to get closer than five hundred feet to the statue,"

Ridenour explained. “They’ll shoot you out of the sky if you fly in too close. So, typically, there are not many photographs showing the kind of facial detail we needed — things like all the rivets and water stains running off the corners of the eyes.” Despite the scarcity of reference material, Metrolight managed to create a perfect likeness.

The statue’s moves in the sequence required that both the arms and face be animated. Senior animator Jim Hillin produced two separate arm moves — the torch arm lowering and the hands coming up to the face. “We have an in-house program called ‘Skin,’” said Hillin, “which allows us to bend the geometry of a model. It creates a kind of skeleton that fits inside the ‘skin’ of the model — in our case, the statue — and allows us to move it. I naturally started with the torch arm up in the air; then I bent it at the shoulder, then at the elbow — just as a person would move. The shot was framed so the torch itself disappeared as the arm came down.”



Michael J. Hood of Precision Effects sculpts a replica of the Statue of Liberty that would later be digitized and computer animated by Metrolight Studios for the Home Alone 2 trailer.

To facilitate the hand slap, a separate hand model was made from a plaster cast and then digitized in the computer. “The hands actually come into the face pretty fast,” Hillin stated, “in just six or seven frames. To give them some life, so they wouldn’t just sit there on the cheekbones, we did the same skin process to the fingers to make them move around a bit. We had looked at Macauley Culkin from Home Alone and noticed that his hands moved on his face after they hit. We also discovered that when you slap your face that hard, you move your head around a little bit. Every subtle movement helped to make it look more lifelike. We also did a motion blur on the hands to create the illusion of speed.”

Michael J. Hood of Precision Effects sculpts a replica of the Statue of Liberty that would later be digitized and computer animated by Metrolight Studios for the Home Alone 2 trailer.

Senior animator Jerry Weil animated the computer model’s features. “We have a program that takes a cylindrical-type object, such as a face, and flattens it out on the screen,” Weil explained. “Once it is flattened, we can use a program very similar to a morphing program. Basically, we apply a grid to the face, match up certain key points around the eyes and the mouth and the nose, and then move those points around to warp the shape of the face, creating facial expressions. The program then takes the information we used to move the flat grid around and reapplies it in three dimensions. I created five or six different facial expressions altogether.”

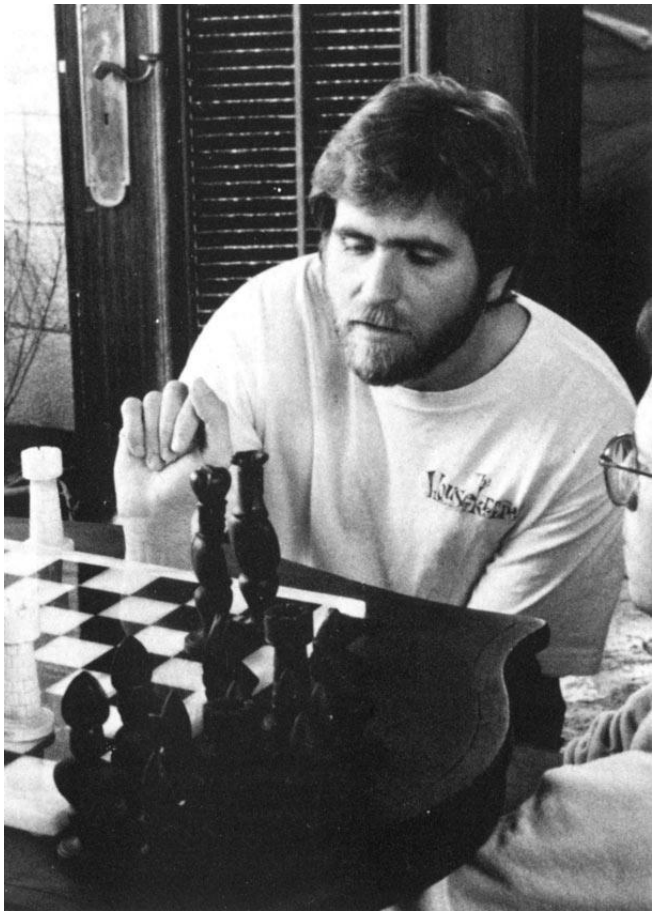
The task of combining the computer generated statue with the background footage was assigned to Jim Hillin. “I’d have the video signal of the statue coming out of the computer,” noted Hillin, “and the video signal of the harbor from the laserdisc, and then overlay them on a screen at a workstation. I could play it back to see how the two were matching up, and then make adjustments from there.” To heighten the overall realism of the sequence, film grain was added to the computer generated images to match the grain of the live-action footage. A diffusing fog effect, a soft-edged matte and color corrections on the statue to match the background were also incorporated. To complete the illusion, animators Steve Skinner and Walt Hyneman created a series of highly-detailed texture maps for the statue’s copper plating, plus bump maps to create surface details like hair, plating and riveting.

The end result of Metrolight’s efforts on the Home Alone 2 trailer is a CGI tour de force in which viewers see what they believe to be the real Statue of Liberty coming to life. “It was our goal from the beginning,” stated Mark Franco, “to integrate a completely computer generated character into the scene and make it believable from the first frame so there would never be a moment when the illusion was broken.”

PROFILE:
ALAN MUNRO

article by Richard Linton

Bestowed upon a mere handful of effects artisans, the title of visual effects supervisor denotes an individual of exceptional talent who is well versed in all aspects of motion picture trickery. Attaining the position is a noteworthy accomplishment, particularly when one has done so after only a few short years in the business. Such is the case with thirty-four-year-old Alan Munro.



Alan Munro studies one of the 'Thing' setups during shooting of The Addams Family.

Born in Oakland in 1958, Munro was first captivated by motion pictures while studying illustration at the prestigeous Art Center College in Pasadena. Although he had originally intended to become an illustrator of books, magazines and posters, introduction to the school's film department would forever change his destiny. "It was at college that I was really bitten by the film bug. I bounced around quite a bit working in films, doing a lot of odds and ends. I did stints as a camera assistant, assistant editor, and worked at a lot of weird, throwaway jobs on films of basically no consequence."

Munro's on-the-job training while in college prepared him for engagement at the educational media division of Walt Disney Studios. The experience he gained there working on film strips laid the groundwork for his initiation into what was to become his first effects work. "After Disney, I went to work at Bob Rogers and Company where I started with industrial films. Because we produced films for exhibits, we utilized all types of strange formats: sideways 65mm with half squeezes or four-screen projection through five mirrors. I also gained valuable experience by conceptualizing and implementing different ways of presenting our ideas to live audiences. Producing effects in non-optical ways really allowed me to explore beyond the bounds of film alone."

In 1986, Munro was invited to join Cannon Films as one of four original members of their newly created effects department. "Cannon was at a real zenith in those days, working on something like fifty films at once. Because we had such a small department, everybody did a little bit of everything: model building, shooting plates and all of it in between." Munro left the department to storyboard The Wraith, a fantasy thriller directed by Mike Marvin. Intrigued by an

establishing sequence which featured a shower of meteors exploding on a desert landscape, Munro convinced Marvin to give him a shot at realizing the effects. “I went out and shot all of the plates and then took them to my friend Pete Kuran at Visual Concept Engineering, who finished the animation and compositing. The sequence worked, which was quite an achievement considering that we did the whole thing for something like $20,000!”

It was with this extensive, varied, yet decidedly low-budget effects background that Munro first encountered director Tim Burton. Preparing Beetlejuice — a film that would secure a reputation for the relatively inexperienced director — Burton originally intended to hire Munro merely as a storyboard artist. When it became apparent that Munro had an affinity for Burton’s unique visual style, however, the effects jack-of-all-trades was promptly promoted to visual effects supervisor of the picture. “Tim and I discovered that we shared a love of quirky in-camera effects shots — especially those that were both strange and magical.”

Following an almost leisurely two years on Beetlejuice were shorter-term assignments on Glory and Little Monsters and, finally, another stint as effects supervisor for A Nightmare on Elm Street 5. “After the experience on Beetlejuice, where we had plenty of time to develop everything, I found the pace on Nightmare 5 to be almost wildly insane. We had, at times, nine separate units shooting around the clock. There were tons of opticals, makeup effects, creatures, in-camera and stop-motion shots — and this all had to go from preproduction to the theater in five-and-a-half months!”

In recent years, Munro has contributed effects expertise to such diverse film projects as Point Break, L.A. Story and Edward Scissorhands. In August 1990, he was again granted the effects supervisory role on The Addams Family. “I’ve been very lucky in that every project I have worked on had its own unique and distinct flavor in terms of effects. In The Addams Family, one of the greatest rewards was that I had a character in the film that was wholly and completely my own — the hand called ‘Thing.’ It was really exciting to be able to concentrate on how many things we could make a hand do. I’ll never forget the moment in the opening sequence when Thing comes scurrying around the side of the clock, pauses and cracks his knuckles — it was an amazing rush to see it visually and to be able to participate in the audience reaction when it was first viewed.”

Having mastered conventional effects work, Alan Munro now has set his sights on the brave new world of visual effects technology — computer generated imagery. “What I would love to do next is a film with a lot of computer generated effects in it. I want to find ways to put a twist on those kinds of effects so that they have a sense of magic and mystery. For all the technical wow and wallop of CGI, it still tends to be somewhat sterile and not very visceral. I’d like to see if we could generate a computer morph that had the same punch as, for example, the transformation scene in An American Werewolf in London That, to me, would be the best of both possible worlds.”

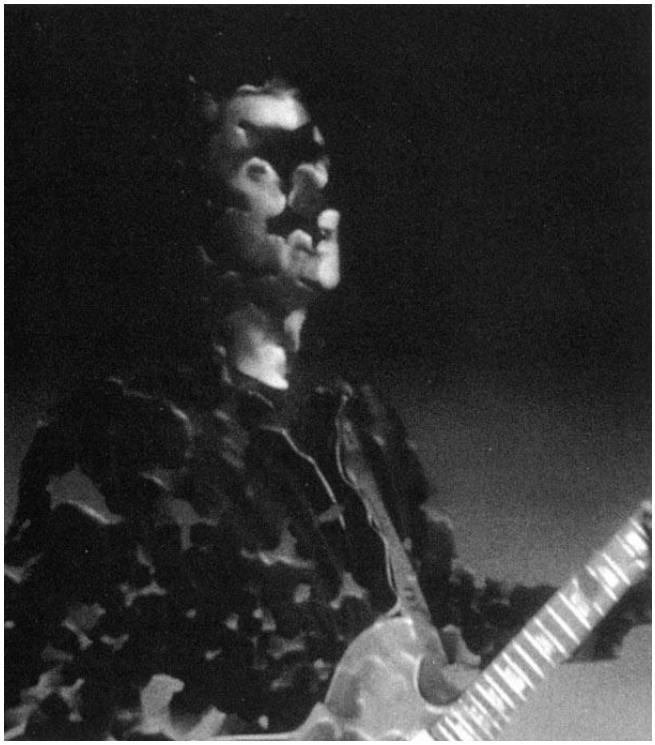
VIDEO BEAT: MORPHING TO THE MADNESS

article by Lance Gilmer

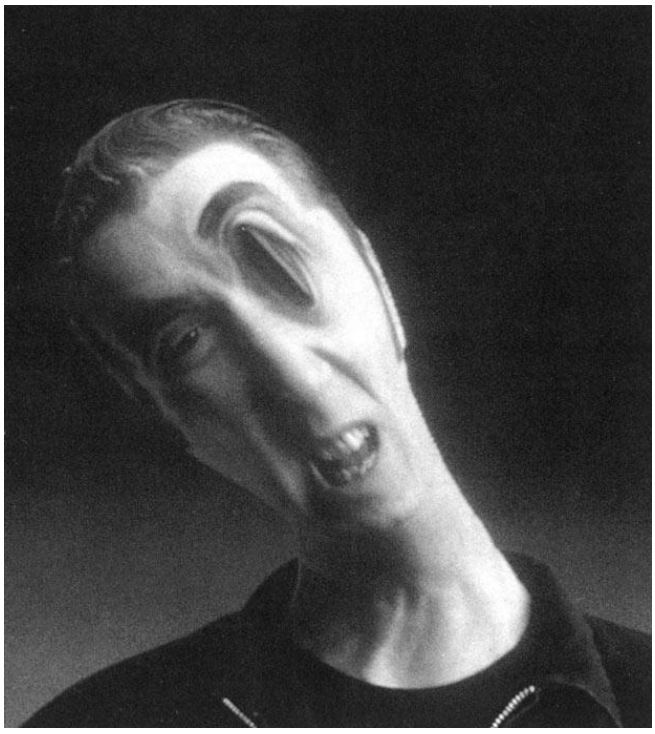
One of the most intriguing music video concepts produced this year has come from the mind of musical architect David Byrne. She's Mad is an imaginatively orchestrated collage which illustrates the performer's mistreatment at the hands of an angry woman. In a series of images realized by computer animation, Byrne's head and body are stretched and contorted in strange and various ways until, finally, he bursts into a million brightly lit particles.

To realize the effects for the four-minute extravaganza, Byrne — who also directed — and producer Lexi Godfrey sought out the digital virtuosity of Pacific Data Images. Byrne's enthusiasm for computer generated effects eventually led to a CG assignment that encompassed nearly thirty shots. "David loved the technology," commented PDI creative director Carlos Arguello, "so he wanted to use just about every technique we had at our disposal. Initially, David had brought us his own hand-drawn storyboards; but after we showed him some of our experimental techniques and he saw what we could do, he went back and redrew the boards so that he could incorporate more of our capabilities." Ultimately, Byrne's story-boards called for a different look for virtually every line of the song. "Because we had so many shots and so little time to complete them, we had to employ about twenty animators to accomplish the assignment — which was an unusually large number to be working on one project."

PDI started with images of Byrne moving in front of a bluescreen. To ensure the bluescreen elements would be workable from a digital



For the David Byrne music video. She's Mad, Pacific Data Images began with bluescreen footage of the performer and employed new morphing techniques to digitally alter his appearance in a number of bizarre ways.



For the David Byrne music video. She's Mad, Pacific Data Images began with bluescreen footage of the performer and employed new

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For the David Byrne music video. She's Mad, Pacific Data Images began with bluescreen footage of the performer and employed new morphing techniques to digitally alter his appearance in a number of bizarre ways.

standpoint, PDI had been on hand as director of photography Gale Tattersall shot plates of Byrne moving to the music. “We specified the kinds of movements we would need for our work,” Arguello said. “One of the things we had to determine was how much movement David should actually do, and how much we should enhance with the computer. We found that very subtle movements from him, with a lot of facial expression, gave us the best plates to work with. For example, there is a shot of his hands wiggling, and David thought it might be best if he actually wiggled them extensively so there would be the basic human motion there — then we could take that image and distort it in the computer. But we discovered that that was harder to do. So we asked him to keep his hands still and let us provide most of the motion. In general, we wanted very little movement from him — the facial expressions were the most important thing he could provide.”

Once the live-action was completed, chosen takes were edited and transferred onto D1 tape to allow for computer manipulation. “D1 is a special videotape that interacts with the computer during postproduction,” stated Arguello. One of the processing techniques applied to the imagery was morphing — the interpolation between two distinct images which allows for a seamless transformation. While a standard, even routine, technique in computer generated effects, morphing was utilized in new ways for She’s Mad. “One of the breakthroughs on this video was our use of morph as an animation tool. With morph, we could do just about anything we wanted to the imagery, including popping David’s eyes out and stretching them, or taking his face and manipulating it as if it were made of rubber.”

For one of the video’s most startling effects — the ‘spiral eyes’ shot — Byrne’s eyes were morphed wide open by animator Ken Bielenberg. Bielenberg then used procedural modeling to manufacture spirals that made the eyes spin like pinwheels. “The center of David’s pupils were reduced and our animated spirals were matted in. We had to track David’s eye movements exactly so that it would seem as if the animated spirals were really inside his eyes.” In another application of three-dimensional animation through morphing, Byrne’s eyes were transformed into tubelike projectiles. To add horrific realism, the tube-eyes were detailed with blood vessels. Animator Michael Collery also modeled a three-dimensional face in the computer to ensure the eyes would cast naturalistic shadows as they projected from Byrne’s morphed eye sockets. The resulting shadow was mapped onto the image of Byrne’s real face to tie in the computer animation with the live-action.

The morph technique was also utilized to stretch Byrne’s ear to inhuman proportions. “First, we had a closeup of David’s face with a woman’s hand entering the frame as if to stretch his ear. Secondly, we had a clean plate of the hand in the frame. Finally, we had two separate ear shots: a side view and a frontal view. All of those elements were shot bluescreen. We did a morph between the two angles of the ear, so it goes from being at a side angle to camera to a front view.

We also used a little bit of morph to get the hand to appear to pull the ear, since in the hand element the hand never actually touched it. All of those elements were composited; and when we were done, we had created one seamless moving image out of four separate images."

Some of the CG tools implemented on the video were so new they were still in experimental stages at PDI. "We create and develop our own computer programs so that we can expand our capabilities," said Arguello. "The tools that PDI utilized on She's Mad offered more control than the usual two-dimensional image processing techniques." Among the new programs employed was one in which Byrne's morphed image was put through a distortion process — animated by Roger Gould — that resulted in rubbery legs and thin, spaghetti-like arms.

Another never-before-seen technology that PDI had only recently developed was utilized for shots of Byrne's body twisting in a corkscrew effect. "Shawn Nealy had come up with some time displacement software," said Arguello. "We had done some tests with that software and we had shots of a body twisting in this corkscrew effect that we had never shown to anyone outside the company. When we showed those tests to David he loved the effect, He said. 'That's exactly what I want for the video.' Since we had never applied the software for a production before, we had to experiment with different approaches." The approach PDI finally settled upon was to photograph Byrne as he rotated three hundred sixty degrees on a turntable. The prototype software was then implemented. "The software displaces the time of the imagery that you are seeing. It tells the computer to put a specific line of imagery into different frames, so you are seeing fifty or sixty frames into the future, which produces the corkscrew effect."

At the end of the video, Byrne's body explodes into particles in a finale that is a progression of three shots animated by Jamie Dixon. To record Byrne's actions for the particle shots, the performer was placed in a 'data suit' "The suit inputs all the action into the computer," stated Arguello, "and then that information can be output in any form we want. It could be fire, or water or anything. In this case, we had it output as little white dots." Using the data gathered from the suit, Dixon was able to animate the three-dimensional particles into a glowing 'particle man' that duplicated Byrne's actions exactly.

Both David Byrne and the PDI team were happy with the effects created for She's Mad. Nominated for two MTV music video awards — best new concept and best special effects — the video was recognized as a popular and artistic success, due in part to its hightech craftsmanship. "This was a huge project in terms of manpower and the number of shots we were assigned," Arguello concluded. "We all worked hard at it. A big plus for us was the fact that just about everyone here was a huge David Byrne fan — that alone made it a lot of fun."

LASER REVOLUTION: THE LOST WORLD REVISITED

article by
David C. Fein

In 1925, The Lost World, the first full-length film to feature stop-motion animation was released to critical and financial success. Using puppet dinosaurs created by Marcel Delgado, stop-motion innovator Willis O'Brien ingeniously incorporated prehistoric animals into scenes with human actors. The story — concerning a group of adventurers who journey to a distant jungle and return with a giant primordial beast — was one that would be echoed by many films to come, including O'Brien's 1933 masterwork, King Kong. So similar was it, in fact, that RKO cautiously purchased the earlier film prior to its release of Kong to insure clear ownership of the plotline. In the years to come, many another filmmaker would make no such pretense. Recently, Lumivision released a laserdisc of The Lost World with a completely new transfer, a newly composed musical accompaniment and a supplement of materials including the theatrical trailer, a still-frame library and a collection of early short films by Willis O'Brien.

Though it is the most complete version of the film currently available, the 70-minute laserdisc version is much abbreviated from the original 104-minute theatrical running time. A1929 lawsuit between the owners of the film rights caused all existing prints to be withdrawn from distribution and destroyed. Only the original negative survived. Years later, that negative was sent to Kodascope Libraries so that the film could be adapted for nontheatrical distribution on 16mm. In the process, the film was edited for educational and religious organizations, resulting in a loss of one-third of the footage, specifically many characterization scenes to shorten the running time and a significant amount of dinosaur action to lessen the perceived violence. For the new Lumivision laserdisc release, the finest elements currently available were employed in transferring the film in its Kodascope form. Regrettably, only stills (included in the supplement) exist to suggest the original's expanded narrative. Using as a guide an original Kodascope print, the transfer was tinted amber, with red fire sequences, to match the original theatrical presentation.

The new video transfer is plagued by white speckles and scratches that are representative of the original source materials. Discounting this unavoidable shortcoming, the transfer is of high quality and very satisfactory. Presumably to clean up the footage, the title cards are reproduced as freeze-frames, as opposed to the original running footage, and consequently are not fully consistent with the surrounding footage. While this unevenness will disrupt the enjoyment of the film for only the most ardent purist, the cards are unaccountably flawed with one or more white speckles that remain in place on the screen due to the frozen frame selected. Defects such as these could have been fixed at a nominal cost.

An important aspect of this release is that the film was transferred at twenty frames per second as opposed to the twenty-four-frame-per-second standard of theatrical sound projection. According to the informative Lumivision insert — by project coordinator and film historian Scott

MacQueen — the fact that silent films of the time usually ran at sixteen to twenty frames per second, and taking into account documentation that the camera was undercranked during production, it was decided that twenty frames per second was acceptable; and at that rate, the film does indeed appear fluid and natural. However, the unusual frame rate makes jitter-free, frame-by-frame advancing impossible. (The film is presented on one CLV and one CAV side of the laserdisc.)

The Lumivision presentation introduces a newly composed score by R.J. Miller consisting of twenty-three different themes. Though entertaining and well written, it often seems repetitious. Since the original score was orchestrated for a film of 104 minutes, it would not have fit the abbreviated version now in existence and thus could not have been used in its entirety. While this release does offer the new musical score — with and without sound effects in stereo — placement of a mono 'music only' track would have rendered one channel available for parts of the original score, or a verbal commentary track, either of which would have been a welcome enhancement.

Just as important as the film itself are the additional short features included on the laserdisc. The first is the original theatrical trailer which happens to include five shots that were extracted from the Kodascope release. Of even greater interest are a number of comedic short subjects made by O'Brien early in his career. His first, The Dinosaur and The Missing Link, is the story of prehistoric cavemen and the demise of The Missing link — who could be considered a distant relative of the mighty Kong. The Missing Link was purchased upon completion by The Edison Company, which distributed the short. Impressed with the work, the company commissioned other short subjects from the budding filmmaker. While employed by Edison, O'Brien made Prehistoric Poultry and R.F.D. 10,000 B.C., both starring puppet cavemen very similar in appearance to the ones in The Missing Link. These shorts provide an important historical record of the development of stop-motion animation and the career of Willis O'Brien. All three have been included on the laserdisc.

The laserdisc also features a still-frame library organized into three sections. The first includes a detailed notation of the lost footage. The scenes are supported by summaries followed by photographs. Each of the descriptions is brief and thorough, and is complemented by separate, more in-depth written coverage included in the dust jacket. While acceptable as it currently exists, scripts, if available, would have added to the completeness of this section. The next section encompasses photographs of the production team. In the third and final section, various photographs of the dinosaur puppets are featured without any text or specific organization. While the photographs are excellent, a detailed description of the effects created for the film is not provided. In addition to the supplement, a well-written printed insert is included in the package. While informative and complete in its description of the production history, the special effects accomplishments of the movie are, again, not covered.

Although the lack of documentation of The Lost World's visual effects — specifically, its pioneering use of glass painting, matte photography and stop-motion animation — is an oversight; it is not one that significantly reduces the value of this collection. Overall, the laserdisc — priced at $44.95 — is a necessary and honorable addition to any collection of animation and the early works of Willis O'Brien. As laserdisc grows as an archival and

education format for the preservation of classic films, one can hope that more releases such as this will become available so that future generations will have the opportunity to enjoy and study the heritage of special effects techniques and filmmaking.

EFFECTS SCENE:
THERAPY IN PEN-AND-INK

article by Estelle Shay

It’s been called irreverent, cynical, and in some circles, the annual revenge on the film business. But for creator John Van Vliet, “The Available Light Calendar — The Preferred Calendar of Migrant Film Workers,” is simply therapy.

A former animator with Industrial Light and Magic and cofounder, with Katherine Kean, of Available Light, Van Vliet started the calendar five years ago as a promotional giveaway for clients. It was a natural outgrowth of the kinds of drawings that animators everywhere pin on office walls. “Quick sketches are what we do in moments of annoyance,” Van Vliet affirmed. “It works like a pressure valve. You see a situation and you find the humor in it. Otherwise, you go crazy.”

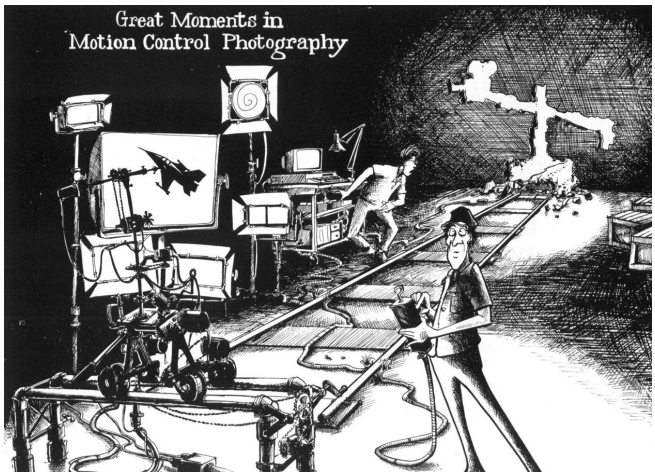
Van Vliet finds plenty of humor in the film industry, and does not hesitate to capitalize on it for his calendar, which features a pithy pen-and-ink cartoon for each month. No one is spared, from fellow workers to studio executives. “Most of the drawings are just gut reactions to things,” noted Van Vliet, citing the inspiration for one of his favorites. “I remember going to bid on a job, only to find out that the filmmakers had something like ninety-three shots they needed done in six weeks — all hideously complex. As we left, I remember telling Kathy, ‘Quick, get me to a drawing board!’”

Van Vliet’s talent for expressing a wry wit through cartooning had its genesis while he was an enlistee in the Air Force. “I was stationed in upstate New York and was invited to do a cartoon strip for our base publication, a standard house organ containing the usual sanitized military hype. In a few short months, I had so many people pissed off we actually attracted the attention of some PR folks at the Pentagon. I was transferred shortly after that — and by amazing coincidence, finished out my military career at one of the only bases in the Air Force without a newsletter.”

Besides the cartoons, the calendar parodies ordinary calendars with an amusing array of cinematic milestones and trivia. Quotations are chosen from many an unlikely source, and Van Vliet is quick to warn colleagues that anything they say is fair game. Ponderable quotes such as, “What bothers me about television is that it tends to take our minds off our minds,” are among his favorites. “But the best quote I ever got,” he allowed, “came from a fellow animator who said, ‘In this culture, creativity is considered a birth defect.’”

As its word-of-mouth popularity has grown, the calendar has developed a devoted following within the film industry — particularly the effects community. Launched with just one hundred fifty copies in 1988, it now has a print run of one thousand. “We missed one edition, in 1990, when we were in the middle of Ghost and had to choose between finishing the calendar or finishing the movie. I put the calendar aside and figured, ‘Okay, no big deal.’ Come December, people were calling me up and writing letters, absolutely indignant about missing it.”

Despite the time and effort it demands, Van Vliet clearly recognizes the appeal of his annual endeavor beyond mere therapy. “Ultimately, those silly cartoons will probably hold up a lot better than some of the work we’ve done on movies. When you’re doing animation, you spend months and months creating something that goes by in a flash. The calendar, on the other hand, lasts all year — and sometimes even longer. It’s always sort of a shock when I walk into an office somewhere and see a tenth-generation xerox of one of my drawings that’s been faxed three times and pasted over an editing bin. It’s as if they have a life of their own.”



Anyone wishing to purchase a 1993 Available Light calendar may do so by sending $13 to Available Light, 3110 West Burbank Boulevard Burbank, California 91505.

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